

Appendix K

Initial CHART Assessment for the Middle Columbia River Steelhead ESU

CHART Participants

The CHART for this ESU consisted of the following NOAA Fisheries biologists: Dale Bambrick (CHART Leader), Tom Cooney, Brett Farman, Kale Gullett, Lynn Hatcher, Scott Hoefer, Eric Murray, and Randy Tweten. CHART members from the U.S. Forest Service consisted of: Rich Gritz, Phil Howell, Ken McDonald, Dan Rife, Chris Rossel, and Al Scott. CHART members also included Jimmy Eisner and John Morris from the U.S. Bureau of Land Management, and David Hand from the U.S. Fish and Wildlife Service. This CHART assessment also benefitted from review and comments by the Washington Department of Fish and Wildlife.

ESU Description

The Middle Columbia River steelhead ESU includes all naturally spawned populations of steelhead in streams from above the Wind River, Washington, and the Hood River, Oregon (exclusive), upstream to, and including, the Yakima River, Washington (excluding steelhead from the Snake River Basin) (64 FR 14517; March 25, 1999). Resident populations of *O. mykiss* below impassible barriers (natural and manmade) that co-occur with anadromous populations are included in the Middle Columbia River steelhead ESU.

Unlike Pacific salmon, steelhead are capable of spawning more than once before death. However, it is rare for steelhead to spawn more than twice before dying, and most that do so are females. Steelhead can be divided into two basic run types based on their level of sexual maturity at the time they enter fresh water and the duration of the spawning migration. The stream-maturing type, or summer steelhead, enters fresh water in a sexually immature condition and requires several months in fresh water to mature and spawn. The ocean-maturing type, or winter steelhead, enters fresh water with well-developed gonads and spawns relatively shortly after river entry. Fish in the MCR steelhead ESU are predominantly summer steelhead, but winter-run fish are found in the Klickitat River, Washington, and Fifteenmile Creek, Oregon.

Both types of steelhead spawn in cool, clear streams with suitable gravel size, depth, and current velocity. They sometimes also use smaller streams for spawning. Summer steelhead enter fresh water between May and October. During summer and fall before spawning, they hold in cool, deep pools. They migrate inland toward spawning areas,

overwinter in the larger rivers, resume migration to natal streams in early spring, and then spawn. Winter steelhead enter fresh water between November and April in the Pacific Northwest, migrate to spawning areas, and then spawn in late winter or spring.

Depending on water temperature, steelhead eggs may incubate for 1.5 to four months before hatching. Summer rearing takes place primarily in the faster parts of pools, although young-of-the-year are abundant in glides and riffles. Winter rearing occurs more uniformly at lower densities across a wide range of fast and slow habitat types. Some older juveniles move downstream to rear in larger tributaries and mainstem rivers. Productive steelhead habitat is characterized by complexity—primarily in the form of large and small wood.

Most fish in this ESU smolt at two years and spend one to two years in salt water before re-entering fresh water, where they may remain for up to a year before spawning. Age-2-ocean steelhead dominate the summer steelhead run in the Klickitat River, whereas most other rivers with summer steelhead produce about equal numbers of both age-1- and 2-ocean fish. Juvenile life stages (i.e., eggs, alevins, fry, and parr) inhabit freshwater/riverine areas throughout the range of the ESU. Parr usually undergo a smolt transformation as 2-year-olds, at which time they migrate to the ocean. Subadults and adults forage in coastal and offshore waters of the North Pacific Ocean before returning to spawn in their natal streams. A nonanadromous form of *O. mykiss* (redband trout) co-occurs with the anadromous form in this ESU, and juvenile life stages of the two forms can be very difficult to differentiate. In addition, hatchery steelhead are also distributed within the range of this ESU.

CHART Area Assessments and Initial Conservation Value Ratings

The CHART assessment for this ESU addressed 15 subbasins containing 111 occupied watersheds, as well as the Columbia River rearing/migration corridor. Subbasins were chosen as freshwater critical habitat units because they present a convenient and systematic way to organize the CHART's watershed assessments for this ESU. The Interior Columbia Basin Technical Recovery Team (ICBTRT 2003) has identified 16 extant demographically independent steelhead populations in four major groups in this recovery planning area: (1) Cascades Eastern Slope Tributaries, (2) John Day River, (3) Umatilla and Walla Walla Rivers, and (4) Yakima River. A fifth unaffiliated group consists of at least the Rock Creek drainage (Washington) to the mid-Columbia River. These groupings are based on the proximity of major drainages, distances between spawning aggregations, topography, and genetic and ecological characteristics. Recovery planning will likely emphasize the need for a geographical distribution of viable

populations across the range of population groupings (also called “strata”) in an ESU (Ruckelshaus et al. 2002, McElhany et al. 2003). Therefore, as part of its assessment the CHART considered the conservation value of each HUC5 in the context of these five population groups.

Unit 1. Upper Yakima (HUC4# 17030001)

The Upper Yakima subbasin is located in central Washington and contained in Kittitas and Yakima counties in Washington. The subbasin contains four watersheds, all of which are occupied by the ESU. These watersheds encompass approximately 2139 mi² and 7,558 miles of streams. Fish distribution and habitat use data from WDFW identify approximately 284 miles of occupied riverine habitat in the subbasin (WDFW 2003). The CHART noted that steelhead PCEs may be more extensive than identified in the WDFW GIS data (WDFW 2003). The Team noted that in the Middle Upper Yakima River HUC5 steelhead in Manastash Creek likely spawn further upstream to the confluence of the north and south forks (characterized as potential habitat in Haring 2001). This extended distribution is depicted in Map K1 as containing at least migration PCEs (with spawning/rearing PCEs likely as well). One demographically independent population in this ESU (Upper Yakima River) occupies this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K1 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that three of the occupied HUC5 watersheds in this subbasin are of high conservation value and one (Umtanum/Wenas) is of medium conservation value to the ESU. The CHART also concluded that while the tributary habitats in the Umtanum/Wenas HUC5 were of medium conservation value, the HUC5 still contains a high value rearing and migration corridor connecting high value upstream watersheds with downstream reaches and the ocean.

The CHART also concluded that several historically occupied areas in this subbasin may be essential for ESU conservation, including upper reaches in Wilson and Naneum creeks (Middle Upper Yakima River HUC5) and areas upstream of Cle Elum, Kacheelus, and Kachess dams (Upper Yakima River HUC5). These dams block substantial amounts of historical habitat and the CHART noted that areas above them were historically important nursery/rearing areas for this ESU and that habitat conditions are still in generally good

condition. The CHART determined that access to these areas would likely promote the conservation of the ESU. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 2. Naches (HUC4# 17030002)

The Naches subbasin is located in central Washington and contained in Kittitas and Yakima counties. The subbasin contains three watersheds, all of which are occupied by the ESU. These watersheds encompass approximately 1,105 mi² and 3,186 miles of streams. Fish distribution and habitat use data from the WDFW identify approximately 230 miles of occupied riverine habitat in the subbasin (WDFW 2003). One demographically independent population in this ESU (Naches River) occupies this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K2 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that all of the occupied HUC5 watersheds in this subbasin are of high conservation value to the ESU. The CHART also concluded that two historically occupied areas in this subbasin may be essential for ESU conservation, including reaches blocked by Bumping Lake Dam in the Little Naches River HUC5 and reaches above Tieton Dam in the Naches/Tieton River HUC5. The CHART noted that areas above both dams were historically important nursery/rearing areas for this ESU and that habitat conditions are in generally good condition. The CHART determined that access to these areas would likely promote the conservation of the ESU. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 3. Lower Yakima (HUC4# 17030003)

The Lower Yakima subbasin is located in central Washington and contained in Benton, Klickitat, and Yakima counties. The subbasin contains seven watersheds, all of which are occupied by the ESU. These watersheds encompass approximately 2,903 mi² and 8,069 miles of streams. Fish distribution and habitat use data from WDFW identify approximately 574 miles of occupied riverine habitat in the subbasin (WDFW 2003). The CHART noted that steelhead PCE distribution in South Medicine Creek (Upper

Toppenish River HUC5) may be less than shown and only include reaches upstream to the vicinity of Evans Road. However, this issue was not resolved by the time of this report. Two demographically independent populations in this ESU (Naches River and Satus and Toppenish Creeks) occupy this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K3 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the occupied HUC5 watersheds in this subbasin are of high and medium conservation value to the ESU. Of the seven HUC5s reviewed, four were rated as having high and three were rated as having medium conservation value. The CHART also concluded that the HUC5s with a medium overall rating contain a high value rearing and migration corridor connecting high value upstream watersheds with downstream reaches and the ocean. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 4. Middle Columbia/Lake Wallula (HUC4# 17070101)

The Middle Columbia/Lake Wallula subbasin includes the mainstem Columbia River and smaller drainages to it downstream of the Snake River and upstream of the John Day River. Counties contained in this subbasin include Gilliam, Sherman, and Umatilla counties in Oregon, and Benton, Klickitat, and Walla Walla counties in Washington. The subbasin contains 14 watersheds, ten of which are occupied by the ESU and five of these consist solely of a Columbia River rearing/migration corridor. Occupied watersheds encompass approximately 2,089 mi² and 3,202 miles of streams. Fish distribution and habitat use data from ODFW and WDFW identify approximately 155 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b; WDFW 2003). The CHART noted that steelhead PCEs may be more extensive than identified in the states' GIS data based on recent communication with Yakama Nation biologists (K. Gullett, NOAA Fisheries, personal communication). Specifically:

- Glade Creek HUC5 – recent redd sightings indicate that steelhead likely occupy lower reaches of Glade Creek; CHART determined that distribution may be similar to that identified in report by Lautz (2000).

- Alder Creek HUC5 – recent stream surveys captured fry indicating that steelhead likely occupy lower reaches of Alder Creek; CHART determined that distribution may be similar to that identified in report by Lautz (2000).
- Pine Creek HUC5 – recent stream surveys identified live steelhead and redds indicating that steelhead likely occupy lower reaches of Alder Creek; CHART determined that distribution may be similar to that identified in report by Lautz (2000).

Map K4 reflects these modifications to the WDFW fish distribution data. The CHART briefly discussed anecdotal information that steelhead may occupy reaches of an adjacent Oregon subbasin in this region – Willow Creek (HUC4 # 17070104). This subbasin was not identified as occupied by steelhead in ODFW's GIS data (ODFW 2003a,b) however one CHART member described a recent observation of anadromous *O. mykiss* in Willow Creek and suspected that steelhead may occupy reaches at least seven miles upstream from the creek mouth. It was also noted that Fulton (1970) depicted at least 10 km of this watershed as occupied by steelhead. However, the CHART could not determine whether the Willow Creek subbasin was in fact occupied or whether such areas contained PCEs for this ESU. Therefore, the CHART decided against rating this area until such time as more information was available to clarify whether watersheds and specific areas within them qualify as critical habitat.

Seven of the 16 demographically independent steelhead populations in this ESU identified by the ICBTRT occupy Columbia River reaches within this subbasin. However, only one of these (Rock Creek, an unaffiliated independent population) is known to spawn here (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K4 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the occupied HUC5 watersheds in this subbasin are of high and medium conservation value to the ESU. Of the ten HUC5s reviewed, seven were rated as having high and three were rated as having medium conservation value. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 5. Walla Walla (HUC4# 17070102)

The Walla Walla subbasin is located in southeast Washington and northeast Oregon. Occupied watersheds in this subbasin are contained in Umatilla and Wallowa counties in Oregon, and Columbia and Walla Walla counties in Washington. The subbasin contains 11 watersheds, nine of which are occupied by the ESU. Occupied watersheds encompass approximately 1,525 mi² and 4,388 miles of streams. Fish distribution and habitat use data from ODFW and WDFW identify approximately 531 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b; WDFW 2003). Two demographically independent populations in this ESU (Walla Walla River and Touchet River) occupy this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K5 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the occupied HUC5 watersheds in this subbasin range from high to low conservation value to the ESU. Of the nine HUC5s reviewed, five were rated as having high, three as having medium, and one (Pine Creek) was rated as having low conservation value. The CHART also concluded that while the tributary habitats in some of the HUC5s were of medium conservation value, the HUC5s still contain a high value rearing and migration corridor connecting high value upstream watersheds with downstream reaches and the ocean. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 6. Umatilla (HUC4# 17070103)

The Umatilla subbasin is located in northeast Oregon and occupied watersheds are contained in Umatilla and Union counties. The subbasin contains 13 watersheds, ten of which are occupied by the ESU. Occupied watersheds encompass approximately 1,828 mi² and 2,155 miles of streams. Fish distribution and habitat use data from ODFW identify approximately 419 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b). One demographically independent population in this ESU (Umatilla River) occupies this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K6 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the occupied HUC5 watersheds in this subbasin range from high to low conservation value to the ESU. Of the ten HUC5s reviewed, six were rated as having high, one as having medium, and three were rated as having low conservation value. The CHART also concluded that while the tributary habitats in one of the HUC5s (Umatilla River/Mission Creek) was of medium conservation value, the HUC5 still contains a high value rearing and migration corridor connecting high value upstream watersheds with downstream reaches and the ocean. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 7. Middle Columbia/Hood (HUC4# 17070105)

The Middle Columbia/Hood subbasin is located in the eastern portion of the Columbia River gorge of Oregon and Washington. Occupied watersheds in this subbasin are contained in Hood River, Sherman, and Wasco counties in Oregon, and Klickitat and Skamania counties in Washington. The subbasin contains 13 watersheds, eight of which are occupied by this ESU. Occupied watersheds encompass approximately 1,461 mi² and 2,049 miles of streams. Fish distribution and habitat use data from ODFW and WDFW identify approximately 272 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b; WDFW 2003). Two demographically independent populations in this ESU (Klickitat River and Fifteenmile Creek) occupy this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K7 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the occupied HUC5 watersheds in this subbasin ranged from high to low conservation value to the ESU. Of the eight HUC5s reviewed, three were rated as having high, four as medium, and one (Upper Middle Columbia/Hood) was rated as having low conservation value. The CHART also concluded that while the tributary habitats in two HUC5s are of low and medium conservation value, these HUC5s still contain a high value Columbia River rearing and migration corridor connecting high value upstream watersheds with downstream reaches and the ocean. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 8. Klickitat (HUC4# 17070106)

The Klickitat subbasin is located in the eastern portion of the Columbia River gorge of Oregon and Washington. Occupied watersheds in this subbasin are contained in Klickitat and Yakima counties in Washington. The subbasin contains four watersheds, all of which are occupied by this ESU. Occupied watersheds encompass approximately 1,351 mi² and 3,232 miles of streams. Fish distribution and habitat use data from WDFW identify approximately 216 miles of occupied riverine habitat in the subbasin (WDFW 2003). The CHART noted that steelhead PCEs may be more extensive than identified in the states' GIS data for White Creek and Brush Creek. Also, the CHART questioned the extent of PCE distribution in Trout Creek. However, the Team was not able to resolve these concerns prior to this report. One demographically independent populations in this ESU (Klickitat River) occupies this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K8 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that all of the HUC5 watersheds in this subbasin are of high conservation value to the ESU, although as noted above, some questions remain regarding the actual extent of PCEs in several streams. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 9. Upper John Day (HUC4# 17070201)

The Upper John Day subbasin is located in north-central Oregon and contained in Crook, Grant, and Wheeler counties. The subbasin contains 14 watersheds, 13 of which are occupied by this ESU. Occupied watersheds encompass approximately 1,991 mi² and 2,463 miles of streams. Fish distribution and habitat use data from ODFW identify approximately 799 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b). The CHART noted that steelhead PCEs may be less extensive than identified in the states' GIS data for Birch Creek (Rock Creek HUC5) and Indian Creek (John Day River/Johnson Creek HUC5) on account of natural waterfalls. However, the Team was not able to resolve these concerns prior to this report. Three demographically independent populations in this ESU (South Fork John Day, Lower Mainstem John Day, Upper Mainstem John Day) occupy this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing

spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K9 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the HUC5 watersheds in this subbasin were of high or medium (Fields Creek) conservation value to the ESU. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 10. North Fork John Day (HUC4# 17070202)

The North Fork John Day subbasin is located in north-central Oregon and contained in Grant, Morrow, Umatilla, Union, and Wheeler counties. The subbasin contains ten watersheds, all of which are occupied by this ESU. Occupied watersheds encompass approximately 1,849 mi² and 2,366 miles of streams. Fish distribution and habitat use data from ODFW identify approximately 931 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b). Two demographically independent populations in this ESU (North Fork John Day and Middle Fork John Day) occupy this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K10 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation. After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the HUC5 watersheds in this subbasin were of high or medium (Lower North Fork John Day River) conservation value to the ESU. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 11. Middle Fork John Day (HUC4# 17070203)

The Middle Fork John Day subbasin is located in north-central Oregon and contained in Grant County. The subbasin contains five watersheds, all of which are occupied by this ESU. Occupied watersheds encompass approximately 792 mi² and 993 miles of streams. Fish distribution and habitat use data from ODFW identify approximately 387 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b). The CHART noted that steelhead PCEs may be more extensive than identified in the states' GIS data for Paul Creek (Long Creek HUC5) and that occupied reaches containing PCEs extend as far as Highway 402. Map K11 reflects this modification to ODFW's data. One

demographically independent population in this ESU (Middle Fork John Day) occupies this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K11 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation. After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the HUC5 watersheds in this subbasin were of high or low (Lower Middle Fork John Day River) conservation value to the ESU. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 12. Lower John Day (HUC4# 17070204)

The Lower John Day subbasin is located in north-central Oregon and contained in Crook, Gilliam, Grant, Jefferson, Morrow, Sherman, Wasco, and Wheeler counties. The subbasin contains 14 watersheds, all of which are occupied by this ESU. Occupied watersheds encompass approximately 3,155 mi² and 3,633 miles of streams. Fish distribution and habitat use data from ODFW identify approximately 829 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b). All five demographically independent populations in this ESU occupy this subbasin, and it contains the bulk of spawning habitat for the Lower Mainstem John Day population (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K12 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation. After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the HUC5 watersheds in this subbasin range from high to low conservation value to the ESU. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 13. Lower Deschutes (HUC4# 17070306)

The Lower Deschutes subbasin drains the eastern slope of the Cascade Range in north-central Oregon. Occupied watersheds in this subbasin are contained in Jefferson, Sherman, and Wasco counties. The subbasin contains 12 watersheds, nine of which are occupied by this ESU. Occupied watersheds encompass approximately 1,891 mi² and 2,416 miles of streams. Fish distribution and habitat use data from ODFW identify

approximately 357 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b). Two demographically independent populations in this ESU (Deschutes River Westside Tributaries and Deschutes River Eastside Tributaries) occupy this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K13 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation. After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the HUC5 watersheds in this subbasin were of high or low (White River) conservation value to the ESU. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 14. Trout (HUC4# 17070307)

The Trout subbasin is located in the upper Deschutes River of central Oregon. Occupied watersheds in this subbasin are contained in Crook, Jefferson, and Wasco counties. The subbasin contains five watersheds, four of which are occupied by this ESU. Occupied watersheds encompass approximately 554 mi² and 683 miles of streams. Fish distribution and habitat use data from ODFW identify approximately 116 miles of occupied riverine habitat in the subbasin (ODFW 2003a,b). One demographically independent populations in this ESU (Deschutes River Eastside Tributaries) occupies this subbasin (ICBTRT 2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K14 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation. After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the HUC5 watersheds in this subbasin ranged from high to low conservation value to the ESU. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 15. Upper Columbia/Priest Rapids (HUC4# 17020016)

The Upper Columbia/Priest Rapids subbasin is located in south-central Washington with occupied areas contained in Benton and Franklin counties. The subbasin contains four watersheds, only one of which (Columbia River/Zintel Canyon) is occupied by the ESU.

The watershed encompasses approximately 211 mi² and 293 miles of streams. Fish distribution and habitat use data from WDFW identify approximately 13 miles of occupied riverine habitat in the subbasin consisting of the Columbia River downstream of its confluence with the Yakima River (WDFW 2003). This watershed is occupied by three demographically independent populations (Satus and Toppenish Creeks, Naches River, and Upper Yakima River) identified by the Interior Columbia Basin TRT (2003). Table K1 summarizes the total number of occupied reaches identified for each HUC5 watershed containing spawning, rearing, or migration PCEs, as well as management activities that may affect the PCEs in the watersheds. Map K15 depicts the specific areas in this subbasin occupied by the ESU and under consideration for critical habitat designation.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the Columbia River/Zintel Canyon HUC5 contained rearing/migration PCEs of high conservation value to the ESU. Table K2 summarizes the CHART's PCE/watershed scores and initial conservation value ratings, and Figure K1 shows the overall distribution of ratings by HUC5 watershed.

Unit 16. Columbia River Corridor

For the purposes of describing units of critical habitat designation for this ESU, NOAA Fisheries defines the Columbia River corridor as that segment from the confluence of the Wind and Columbia rivers downstream to the Pacific Ocean. This confluence is located at the downstream boundary of the Middle Columbia/Grays Creek HUC5 which was the furthest downstream HUC5 with spawning or tributary PCEs identified in the range of this ESU. Fish distribution and habitat use data from ODFW and WDFW identify approximately 151 miles of occupied riverine and estuarine habitat in this corridor (ODFW 2003a,b; WDFW 2003). This corridor overlaps with the following counties: Clatsop, Columbia, Gilliam, Hood River, Morrow, Multnomah, Sherman, Umatilla, and Wasco counties in Oregon, and Benton, Clark, Cowlitz, Franklin, Klickitat, Skamania, Wahkiakum, and Walla Walla counties in Washington.

After reviewing the best available scientific data for all of the areas within the freshwater and estuarine range of this ESU, the CHART concluded that the Columbia River corridor was of high conservation value to the ESU. The CHART noted that this corridor connects every watershed and population in this ESU with the ocean and is used by rearing/migrating juveniles and migrating adults. The Columbia River estuary is a particularly important area for this ESU as both juveniles and adults make the critical

physiological transition between life in freshwater and marine habitats (Marriott et al. 2002).

Marine Areas

NOAA Fisheries' analysis focused on freshwater and estuarine habitats upstream of the mouth of the Columbia River. While marine areas are occupied by this ESU, within this vast area the agency has not identified "specific areas within the geographical area occupied by the species . . . on which are found those physical or biological features . . . essential to the conservation of the species."

References and Sources of Information

References cited above as well as key reports and data sets reviewed by the CHART include the following:

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Table K1. Summary of Occupied Areas, PCEs, and Management Activities Affecting PCEs for the Middle Columbia River Steelhead ESU

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Spawning / Rearing PCEs (mi)	Rearing/ Migration PCEs (mi)	Presence/ Migration Only PCEs (mi)*	Management Activities**
K1	Upper Yakima	Upper Yakima River	1703000101	39.7	0.0	8.2	F, Fi, G, I, M, R
K1	Upper Yakima	Teanaway River	1703000102	33.6	22.3	22.2	F, Fi, I, M, R
K1	Upper Yakima	Middle Upper Yakima River	1703000103	56.1	22.0	39.6	A, F, Fi, G, I, M, R, U
K1	Upper Yakima	Umtanum/Wenas	1703000104	10.7	26.1	4.4	A, F, Fi, G, I, M, R
K2	Naches	Little Naches River	1703000201	62.9	0.0	18.1	F, Fi, I
K2	Naches	Naches River/Rattlesnake Creek	1703000202	67.5	0.0	7.1	F, Fi, G, I, R
K2	Naches	Naches River/Tieton River	1703000203	63.0	4.1	7.3	A, F, Fi, G, I, R
K3	Lower Yakima	Ahtanum Creek	1703000301	39.8	0.0	39.8	A, F, Fi, G, I, R, U
K3	Lower Yakima	Upper Lower Yakima River	1703000302	0.0	0.0	15.2	A, C, F, Fi, G, R, U
K3	Lower Yakima	Upper Toppenish Creek	1703000303	60.5	0.0	50.8	A, F, Fi, G, R
K3	Lower Yakima	Lower Toppenish Creek	1703000304	14.1	0.0	116.0	A, C, Fi, G, I, R, U
K3	Lower Yakima	Satus Creek	1703000305	83.1	0.0	29.2	F, Fi, G, M, R
K3	Lower Yakima	Yakima River/Spring Creek	1703000306	1.4	0.0	95.7	A, F, Fi, G, I, R, U
K3	Lower Yakima	Yakima River/Cold Creek	1703000307	0.0	0.0	28.1	A, Fi, R, U
K4	Middle Columbia/Lake Wallula	Upper Lake Wallula	1707010101	0.0	0.0	11.8	A, Fi, R, U
K4	Middle Columbia/Lake Wallula	Lower Lake Wallula	1707010102	0.0	0.0	21.7	A, D, Fi, R
K4	Middle Columbia/Lake Wallula	Glade Creek	1707010105	0.0	0.0	1.0	A, F, Fi, G, R
K4	Middle Columbia/Lake Wallula	Upper Lake Umatilla	1707010106	0.0	0.0	20.2	A, D, Fi, R, U

K4	Middle Columbia/Lake Wallula	Middle Lake Umatilla	1707010109	0.0	0.0	17.3	A, D, Fi, R
K4	Middle Columbia/Lake Wallula	Alder Creek	1707010110	0.0	0.0	3.0	A, Fi, G, R
K4	Middle Columbia/Lake Wallula	Pine Creek	1707010111	0.0	0.0	4.5	A, F, Fi, G
K4	Middle Columbia/Lake Wallula	Wood Gulch	1707010112	0.0	0.0	11.3	A, F, Fi, R
K4	Middle Columbia/Lake Wallula	Rock Creek	1707010113	3.5	0.0	17.8	A, F, Fi, G, R
K4	Middle Columbia/Lake Wallula	Lower Lake Umatilla	1707010114	0.0	0.0	43.3	A, D, Fi, R
K5	Walla Walla	Upper Walla Walla River	1707010201	54.3	25.2	0.0	A, D, F, Fi, G, I, R
K5	Walla Walla	Mill Creek	1707010202	23.5	18.1	22.4	A, F, Fi, I, R, U
K5	Walla Walla	Upper Touchet River	1707010203	70.5	22.6	26.7	A, F, Fi, G, I, R
K5	Walla Walla	Middle Touchet River	1707010204	29.0	8.4	7.7	A, C, Fi, I, R
K5	Walla Walla	Lower Touchet River	1707010207	0.0	0.0	41.2	A, I
K5	Walla Walla	Cottonwood Creek	1707010208	29.7	26.1	23.0	A, F, I, R, U
K5	Walla Walla	Pine Creek	1707010209	0.0	0.0	5.3	A, Fi, I, R
K5	Walla Walla	Dry Creek	1707010210	15.7	4.1	25.2	A, C, Fi, F, R
K5	Walla Walla	Lower Walla Walla River	1707010211	1.0	7.0	44.1	A, Fi, R
K6	Umatilla	Upper Umatilla River	1707010301	42.2	25.0	0.0	A, F, Fi, G, R
K6	Umatilla	Meacham Creek	1707010302	50.3	30.0	0.0	F, Fi, G, R
K6	Umatilla	Umatilla River/Mission Creek	1707010303	48.4	37.6	0.0	A, F, Fi, G, I, R, U
K6	Umatilla	Wildhorse Creek	1707010304	11.0	0.4	0.0	A, C, U
K6	Umatilla	Mckay Creek	1707010305	6.0	0.0	0.0	A, C, F, Fi, I, R, U
K6	Umatilla	Birch Creek	1707010306	77.9	26.5	2.6	A, F, Fi, G, I, R
K6	Umatilla	Umatilla River/Alkali Canyon	1707010307	0.0	26.4	0.0	A, F, Fi, I, R, U
K6	Umatilla	Stage Gulch	1707010308	0.0	5.6	0.0	A, C, F, U
K6	Umatilla	Lower Butter Creek	1707010310	7.1	0.0	0.0	A, F, Fi, G, R
K6	Umatilla	Lower Umatilla River	1707010313	0.0	21.6	0.0	A, C, F, Fi, G, I, R, U

K7	Middle Columbia/Hood	Upper Middle Columbia/Hood	1707010501	6.9	0.0	15.0	A, D, Fi, G, S, R, T
K7	Middle Columbia/Hood	Fifteenmile Creek	1707010502	61.7	0.0	1.5	A, F, Fi, G, I, R, U
K7	Middle Columbia/Hood	Fivemile Creek	1707010503	47.8	3.2	2.4	A, F, Fi, G, I, R, U
K7	Middle Columbia/Hood	Middle Columbia/Mill Creek	1707010504	30.2	0.0	25.5	A, D, F, Fi, G, R, T, U
K7	Middle Columbia/Hood	Mosier Creek	1707010505	2.9	0.0	1.1	F, Fi, G, R, U
K7	Middle Columbia/Hood	White Salmon River	1707010509	3.1	0.0	1.9	A, C, D, F, R, U
K7	Middle Columbia/Hood	Little White Salmon River	1707010510	1.1	<0.1	0.5	D, F, R
K7	Middle Columbia/Hood	Middle Columbia/Grays Creek	1707010512	4.7	0.2	62.4	F, Fi, R, T
K8	Klickitat	Upper Klickitat River	1707010601	11.8	2.5	60.0	F, Fi, R
K8	Klickitat	Middle Klickitat River	1707010602	31.0	<0.1	9.2	F, Fi, G, R
K8	Klickitat	Little Klickitat River	1707010603	18.8	0.0	17.5	A, F, Fi, R
K8	Klickitat	Lower Klickitat River	1707010604	43.4	0.0	21.8	A, F, Fi, G, R
K9	Upper John Day	Middle South Fork John Day	1707020103	20.7	0.0	0.0	F, Fi, G
K9	Upper John Day	Murderers Creek	1707020104	52.4	0.0	15.6	C, F, Fi, G, I, R
K9	Upper John Day	Lower South Fork John Day	1707020105	79.3	0.0	0.0	F, Fi, G, I
K9	Upper John Day	Upper John Day River	1707020106	73.1	0.0	0.0	A, F, Fi, G, I, R
K9	Upper John Day	Canyon Creek	1707020107	51.1	0.0	5.5	F, Fi, G, I, R
K9	Upper John Day	Strawberry Creek	1707020108	106.1	0.8	2.2	A, F, Fi, G, I, M, R, U
K9	Upper John Day	Beech Creek	1707020109	44.5	0.0	1.8	A, F, Fi, G, I, R
K9	Upper John Day	Laycock Creek	1707020110	46.7	14.8	1.1	A, F, Fi, G, I, R
K9	Upper John Day	Fields Creek	1707020111	45.4	20.2	3.7	A, F, Fi, G, I, R
K9	Upper John Day	Upper Middle John Day	1707020112	41.5	7.1	0.0	F, Fi, G, I
K9	Upper John Day	Mountain Creek	1707020113	65.3	0.0	0.0	A, F, Fi, G, I, R
K9	Upper John Day	Rock Creek	1707020114	48.6	0.0	0.0	Fi, G, I, R
K9	Upper John Day	John Day River/Johnson Creek	1707020115	32.1	19.2	0.3	F, Fi, G, I, R
K10	North Fork John Day	Upper North Fork John Day River	1707020201	72.4	6.1	1.1	F, Fi, G, M, R

K10	North Fork John Day	Granite Creek	1707020202	78.8	5.8	2.4	F, Fi, G, M, R
K10	North Fork John Day	North Fork John Day River/Big Creek	1707020203	79.0	2.5	2.2	F, Fi, G
K10	North Fork John Day	Desolation Creek	1707020204	49.6	6.8	10.1	F, Fi, G
K10	North Fork John Day	Upper Camas Creek	1707020205	75.4	0.0	20.2	F, Fi, G, R
K10	North Fork John Day	Lower Camas Creek	1707020206	98.9	0.0	16.3	A, F, Fi, G, R
K10	North Fork John Day	North Fork John Day River/Potamus Creek	1707020207	106.3	33.9	3.2	A, F, Fi, G, R
K10	North Fork John Day	Wall Creek	1707020208	97.6	12.8	0.0	F, Fi, G, R
K10	North Fork John Day	Cottonwood Creek	1707020209	75.8	0.0	8.7	F, Fi, G, I
K10	North Fork John Day	Lower North Fork John Day River	1707020210	41.8	22.1	1.3	F, Fi, G, I
K11	Middle Fork John Day	Upper Middle Fork John Day River	1707020301	44.5	0.0	3.2	F, Fi, G, I, R
K11	Middle Fork John Day	Camp Creek	1707020302	111.9	0.0	19.0	F, Fi, G, I, M, R
K11	Middle Fork John Day	Big Creek	1707020303	84.1	<0.1	8.0	A, F, Fi, G, I, M, R
K11	Middle Fork John Day	Long Creek	1707020304	66.0	0.0	3.1	A, F, Fi, G, I, R
K11	Middle Fork John Day	Lower Middle Fork John Day River	1707020305	22.3	25.2	0.0	A, F, Fi, G, R
K12	Lower John Day	Lower John Day River/Kahler Creek	1707020401	84.1	0.6	24.4	F, Fi, G, I
K12	Lower John Day	Lower John Day River/Service Creek	1707020402	33.5	0.0	24.4	F, Fi, G, R
K12	Lower John Day	Bridge Creek	1707020403	66.9	0.0	0.0	F, Fi, G, I, R
K12	Lower John Day	Lower John Day River/Muddy Creek	1707020404	50.8	0.0	23.2	Fi, G
K12	Lower John Day	Lower John Day River/Clarno	1707020405	3.7	0.0	27.8	F, Fi, G
K12	Lower John Day	Butte Creek	1707020406	43.2	0.0	0.0	A, F, Fi, G, I
K12	Lower John Day	Pine Hollow	1707020407	36.8	0.0	0.0	Fi, G
K12	Lower John Day	Thirtymile Creek	1707020408	56.3	0.0	0.0	A, F, Fi, G
K12	Lower John Day	Lower John Day River/Ferry Canyon	1707020409	21.3	0.0	29.5	A, Fi, G
K12	Lower John Day	Lower John Day River/Scott Canyon	1707020410	46.3	0.0	33.1	A, Fi, G

K12	Lower John Day	Upper Rock Creek	1707020411	105.1	0.0	0.0	F, Fi, G
K12	Lower John Day	Lower Rock Creek	1707020412	29.4	29.8	0.0	A, F, Fi, G, I
K12	Lower John Day	Grass Valley Canyon	1707020413	36.3	1.5	0.0	A, Fi, G
K12	Lower John Day	Lower John Day River/Mcdonald Ferry	1707020414	0.0	0.0	21.5	A, F, Fi, G
K13	Lower Deschutes	Upper Deschutes River	1707030603	37.4	0.0	0.0	A, C, D, F, Fi, G, R, U
K13	Lower Deschutes	Mill Creek	1707030604	17.3	4.6	0.0	F, Fi, G, R
K13	Lower Deschutes	Beaver Creek	1707030605	32.5	0.0	0.0	A, F, Fi, M, R
K13	Lower Deschutes	Warm Springs River	1707030606	37.2	27.1	0.0	F, Fi, G, R
K13	Lower Deschutes	Middle Deschutes River	1707030607	72.0	2.4	0.0	A, F, Fi, G, R
K13	Lower Deschutes	Bakeoven Creek	1707030608	35.2	0.0	0.0	A, Fi, G
K13	Lower Deschutes	White River	1707030610	1.9	0.0	0.0	A, F, Fi, G, R
K13	Lower Deschutes	Buck Hollow Creek	1707030611	37.7	0.0	0.0	A, G, R
K13	Lower Deschutes	Lower Deschutes River	1707030612	40.8	10.1	0.5	A, Fi, G, R
K14	Trout	Upper Trout Creek	1707030701	78.0	1.2	0.0	F, Fi, G, I, R
K14	Trout	Antelope Creek	1707030702	17.7	0.0	0.0	A, G, I, R
K14	Trout	Mud Springs Creek	1707030704	1.5	0.0	0.0	A, F, Fi, G, I
K14	Trout	Lower Trout Creek	1707030705	17.0	0.0	0.0	A, C, Fi, G, I, R
K15	Upper Columbia/Priest Rapids	Columbia River Zintel Canyon	1702001606	0.0	0.0	13.3	A, D, Fi, R, U
	Multiple	Columbia River corridor	NA	0.0	169	0.0	C, D, I, R, T, U, W

* Some streams classified as “Presence/Migration Only PCEs” may also include rearing or spawning PCEs, but the GIS data are still undergoing review to confirm species use type.

** This list is not exhaustive. It is intended to highlight key management activities affecting PCEs in each watershed. Activities identified are based on the general categories described by Spence et al. (1996) and summarized previously in the “Special Management Considerations or Protection” section of this report. Coding is as follows: F= forestry, G = grazing, A = agriculture, C = channel modifications/diking, R = road building/maintenance, U = urbanization, S = sand and gravel mining, M = mineral mining, D = dams, I = irrigation impoundments and withdrawals, T = river, estuary, and ocean traffic, W = wetland loss/removal, B = beaver removal, X = exotic/invasive species introductions, H = forage fish/species harvest. Primary sources for this information were the CHART, Washington Conservation Commission Reports on Salmonid Limiting Factors, Subbasin Summary Reports of the NWPPC, and land use/land cover GIS layers from the U.S. Geological Survey.

Table K2. Summary of Initial CHART Scores and Ratings of Conservation Value for Habitat Areas in HUC5 Watersheds Occupied by the Middle Columbia River Steelhead ESU

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K1	Upper Yakima	Upper Yakima River	1703000101	12*	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Yakima River group; CHART noted that lake systems were likely a unique habitat type in this HUC5; CHART also concluded that additional areas upstream of Cle Elum, Kachess, and Kacheelus dams may be essential for ESU conservation; upper reaches of watershed are in a FEMAT key watershed for at-risk anadromous salmonids	High*
K1	Upper Yakima	Teanaway River	1703000102	13	Moderate-high HUC5 score; extensive PCEs support one of three TRT demographically independent populations in the Yakima River group; CHART noted unique geological conditions in this HUC5	High

¹² PCE/watershed scores were derived using the CHART scoring process described in the introduction to this report.

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K1	Upper Yakima	Middle Upper Yakima River	1703000103	12	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Yakima River group; CHART noted that HUC5 supports a unique Swauk interior redband trout type; CHART extended distribution in Manastash River and determined that additional reaches in Wilson and Naneum Creeks may be essential for ESU conservation	High
K1	Upper Yakima	Umtanum/Wenas	1703000104	10	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Yakima River group; tributary PCEs more limited than in upstream HUC5s but this HUC5 contains high value rearing/migration PCEs for the upstream HUC5s	Medium
K2	Naches	Little Naches River	1703000201	13	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Yakima River group; CHART noted that steelhead may get upstream of Bumping Lake Dam during rare flow events and also concluded that additional areas upstream of Bumping Lake Dam may be essential for ESU conservation	High
K2	Naches	Naches River/Rattlesnake Creek	1703000202	13	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Yakima River group; HUC5 contains high value rearing/migration PCEs for the upstream HUC5	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K2	Naches	Naches River/Tieton River	1703000203	11	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Yakima River group; CHART concluded that additional areas upstream of Tieton Dam may be essential for ESU conservation; HUC5 contains high value rearing/migration PCEs for upstream HUC5s	High
K3	Lower Yakima	Ahtanum Creek	1703000301	12	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Yakima River group; CHART noted that fish may be genetically unique (with limited hatchery influence) and that Upper North Fork probably has best PCEs	High
K3	Lower Yakima	Upper Lower Yakima River	1703000302	10	Moderate HUC5 score; very limited PCEs in this HUC5; tributary habitats are of medium conservation value however HUC5 contains high value rearing/migration PCEs supporting two populations spawning in upstream HUC5s; CHART noted limited hatchery influence	Medium

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K3	Lower Yakima	Upper Toppenish Creek	1703000303	13	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Yakima River group; CHART noted that this HUC5 has a wide array of habitats supporting high elevation spawners and juveniles with summer persistence in pools of the shrub-steppe zone; CHART also noted limited hatchery influence	High
K3	Lower Yakima	Lower Toppenish Creek	1703000304	10	Moderate HUC5 score; PCEs more degraded here than upstream HUC5s; tributary habitats are of medium conservation value however HUC5 contains high value rearing/migration PCEs supporting three populations spawning in this and upstream HUC5s; CHART noted this HUC5 contains holding areas important for pre-spawning adults and noted limited hatchery influence	Medium
K3	Lower Yakima	Satus Creek	1703000305	13	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Yakima River group; CHART noted unique shrub-steppe habitat and limited hatchery influence in this HUC5	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K3	Lower Yakima	Yakima River/Spring Creek	1703000306	9	Moderate HUC5 score; PCEs more degraded here than upstream HUC5s (i.e., dependence on agriculture-related return flows); tributary habitats are of medium conservation value however HUC5 contains high value rearing/migration PCEs supporting three populations spawning in upstream HUC5s; CHART noted limited hatchery influence	Medium
K3	Lower Yakima	Yakima River/Cold Creek	1703000307	ns	Not scored since HUC5 consists solely of high value Columbia River corridor	High
K4	Middle Columbia/Lake Wallula	Upper Lake Wallula	1707010101	ns	Not scored since HUC5 consists solely of high value Columbia River corridor	High
K4	Middle Columbia/Lake Wallula	Lower Lake Wallula	1707010102	ns	Not scored since HUC5 consists solely of high value Columbia River corridor	High
K4	Middle Columbia/Lake Wallula	Glade Creek	1707010105	7	Moderate HUC5 score; HUC5 not associated with a TRT demographically independent population but CHART determined that this and other small tributaries to the Columbia River in this area may have always supported small spawning aggregations that could contribute to ESU conservation	Medium
K4	Middle Columbia/Lake Wallula	Upper Lake Umatilla	1707010106	ns	Not scored since HUC5 consists solely of high value Columbia River corridor	High
K4	Middle Columbia/Lake Wallula	Middle Lake Umatilla	1707010109	ns	Not scored since HUC5 consists solely of high value Columbia River corridor	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K4	Middle Columbia/Lake Wallula	Alder Creek	1707010110	7	Moderate HUC5 score; HUC5 not associated with a TRT demographically independent population but CHART determined that this and other small tributaries to the Columbia River in this area may have always supported small spawning aggregations that could contribute to ESU conservation	Medium
K4	Middle Columbia/Lake Wallula	Pine Creek	1707010111	7	Moderate HUC5 score; HUC5 not associated with a TRT demographically independent population but CHART determined that this and other small tributaries to the Columbia River in this area may have always supported small spawning aggregations that could contribute to ESU conservation	Medium
K4	Middle Columbia/Lake Wallula	Wood Gulch	1707010112	11	Moderate-high HUC5 score; HUC5 not associated with a TRT demographically independent population but CHART determined that this and other small tributaries to the Columbia River in this area may have always supported small spawning aggregations that could contribute to ESU conservation; PCEs are more extensive in this HUC5 than in Glade, Alder and Pine creek HUC5s	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K4	Middle Columbia/Lake Wallula	Rock Creek	1707010113	13	Moderate-high HUC5 score; HUC5 associated with a TRT unaffiliated demographically independent population; CHART determined that this and other small tributaries to the Columbia River in this area may have always supported small spawning aggregations that could contribute to ESU conservation; PCEs are more extensive in this HUC5 than in Glade, Alder and Pine creek HUC5s; CHART noted that this HUC5 is situated in an ecotone/transition area re: summer- and winter-run steelhead	High
K4	Middle Columbia/Lake Wallula	Lower Lake Umatilla	1707010114	ns	Not scored since HUC5 consists solely of high value Columbia River corridor	High
K5	Walla Walla	Upper Walla Walla River	1707010201	11	Moderate-high HUC5 score; extensive PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; CHART noted that uppermost reaches (especially in South Fork) are in best condition; PCEs also overlap with AFS critical watershed	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K5	Walla Walla	Mill Creek	1707010202	11	Moderate-high HUC5 score; extensive PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; CHART noted that this HUC5 is the highest elevation watershed in the basin, the uppermost reaches (municipal water supply) are in best condition, and the HUC5 has had limited hatchery influence; PCEs overlap with AFS critical watershed	High
K5	Walla Walla	Upper Touchet River	1707010203	13	Moderate-high HUC5 score; extensive PCEs (especially spawning) support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group	High
K5	Walla Walla	Middle Touchet River	1707010204	10	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; HUC5 contains tributary spawning as well as a high value rearing/migration corridor for upstream HUC5	High
K5	Walla Walla	Lower Touchet River	1707010207	8	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; no tributary PCEs so rating is based on the mainstem being a high value rearing/migration corridor for upstream HUC5s	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K5	Walla Walla	Cottonwood Creek	1707010208	7	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; CHART noted that habitat quality is patchy and more degraded than upper watersheds; HUC5 contains a high value rearing/migration corridor for upstream HUC5	Medium
K5	Walla Walla	Pine Creek	1707010209	7	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group but are very limited in this HUC5	Low
K5	Walla Walla	Dry Creek	1707010210	7	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; CHART noted that habitat quality is patchy and more degraded than upper watersheds	Medium
K5	Walla Walla	Lower Walla Walla River	1707010211	8	Moderate HUC5 score; PCEs support two of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; CHART determined that tributary PCEs are of medium conservation value but the migration and rearing corridor for upstream HUC5s is high value	Medium

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K6	Umatilla	Upper Umatilla River	1707010301	12	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; CHART considered this one of the best of all HUC5s supporting this population; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K6	Umatilla	Meacham Creek	1707010302	12	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; CHART considered this one of the best of all HUC5s supporting this population; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K6	Umatilla	Umatilla River/Mission Creek	1707010303	9	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; HUC5 contains a high value rearing/migration corridor for upstream HUC5 but CHART considered tributary PCE quality as lower than upstream HUC5s	Medium
K6	Umatilla	Wildhorse Creek	1707010304	7	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; identified by ODFW as a priority area for this ESU; CHART noted that this HUC5 has very limited PCE quantity and quality	Low
K6	Umatilla	Mckay Creek	1707010305	10	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; identified by ODFW as a priority area for this ESU; limited spawning PCEs but CHART noted that this HUC5 is the primary coldwater source for rearing/migration PCEs in the lower Umatilla River	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K6	Umatilla	Birch Creek	1707010306	11	Moderate-high HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU and CHART noted that there are active restoration activities underway here	High
K6	Umatilla	Umatilla River/Alkali Canyon	1707010307	9	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; no tributary PCEs so CHART concluded that HUC5 value is as a high value rearing/migration corridor for upstream HUC5s	High
K6	Umatilla	Stage Gulch	1707010308	6	Low-moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; CHART noted that this HUC5 has very limited PCE quantity and quality	Low
K6	Umatilla	Lower Butter Creek	1707010310	7	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; CHART noted that this HUC5 has very limited PCE quantity and quality	Low

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K6	Umatilla	Lower Umatilla River	1707010313	8	Moderate HUC5 score; PCEs support one of three TRT demographically independent populations in the Walla Walla and Umatilla Rivers group; no tributary PCEs so CHART concluded that HUC5 value is as a high value rearing/migration corridor for upstream HUC5s, although PCEs are degraded (e.g., seasonal dewatering)	High
	Willow	Lower Willow Creek	1707010405	ns	Not scored or rated; anecdotal information indicates HUC5(s) may be occupied but unresolved by CHART	Unknown
K7	Middle Columbia/Hood	Upper Middle Columbia/Hood	1707010501	4	Low-moderate HUC5 score; tributary PCEs not associated with a TRT demographically independent populations in this region; while tributary PCEs are of low value, Columbia River reaches in HUC5 have high conservation value as rearing/migration corridor for all upstream HUC5s and populations	Low
K7	Middle Columbia/Hood	Fifteenmile Creek	1707010502	11	Moderate-high HUC5 score; PCEs support spawning for one of four TRT demographically independent populations in this region; CHART noted that PCEs support winter-run steelhead; PCEs overlap with a FEMAT key watershed for at-risk anadromous salmonids and an AFS critical watershed	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K7	Middle Columbia/Hood	Fivemile Creek	1707010503	11	Moderate-high HUC5 score; PCEs support spawning for one of four TRT demographically independent populations in this region; CHART noted that PCEs support winter-run steelhead; PCEs overlap with a FEMAT key watershed for at-risk anadromous salmonids and an AFS critical watershed	High
K7	Middle Columbia/Hood	Middle Columbia/Mill Creek	1707010504	10	Moderate HUC5 score; tributary PCEs support spawning for one of four TRT demographically independent populations in this region; Columbia River reaches in this HUC5 contain high value rearing/migration PCEs and support nearly every extant population in this ESU; CHART noted that PCEs support winter-run steelhead; PCEs in this HUC5 also overlap with a FEMAT key watershed for at-risk anadromous salmonids and an AFS critical watershed	High
K7	Middle Columbia/Hood	Mosier Creek	1707010505	8	Moderate HUC5 score; PCEs support spawning for one of four TRT demographically independent populations in this region; CHART noted that PCEs support winter-run steelhead but PCEs are extremely limited in this HUC5	Medium

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K7	Middle Columbia/Hood	White Salmon River	1707010509	9	Moderate HUC5 score; PCEs associated with one historic TRT population; limited PCEs and CHART noted that other HUC5s likely have higher conservation value for ESU in this TRT region	Medium
K7	Middle Columbia/Hood	Little White Salmon River	1707010510	8	Moderate HUC5 score; PCEs associated with one historic TRT population; very limited PCEs and CHART noted that other HUC5s likely have higher conservation value for ESU in this TRT region	Medium
K7	Middle Columbia/Hood	Middle Columbia/Grays Creek	1707010512	9	Moderate HUC5 score; very limited tributary PCEs and CHART noted that Klickitat and Deschutes HUC5s likely have higher conservation value for ESU in this TRT region; Columbia River reaches in HUC5 high conservation value as rearing/migration corridor for all upstream HUC5s	Medium
K8	Klickitat	Upper Klickitat River	1707010601	12	Moderate-high HUC5 score; PCEs support spawning for one of four TRT demographically independent populations in this region; CHART noted that PCEs are in generally good condition throughout this subbasin and this HUC5 may support winter-run steelhead in this HUC5	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K8	Klickitat	Middle Klickitat River	1707010602	12	Moderate-high HUC5 score; PCEs support spawning for one of four TRT demographically independent populations in this region; CHART noted that PCEs are in generally good condition throughout this subbasin and this HUC5 may support winter-run steelhead in this HUC5	High
K8	Klickitat	Little Klickitat River	1707010603	11	Moderate-high HUC5 score; PCEs support spawning for one of four TRT demographically independent populations in this region; CHART noted that PCEs are in generally good condition throughout this subbasin, although fish passage may be a concern in some years in this HUC5	High
K8	Klickitat	Lower Klickitat River	1707010604	11	Moderate-high HUC5 score; PCEs support spawning for one of four TRT demographically independent populations in this region; CHART noted that PCEs are in generally good condition throughout this subbasin and this HUC5 likely support summer- and winter-run steelhead in this HUC5	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K9	Upper John Day	Middle South Fork John Day	1707020103	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU	High
K9	Upper John Day	Murderers Creek	1707020104	13	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); PCEs overlap with AFS critical watershed	High
K9	Upper John Day	Lower South Fork John Day	1707020105	13	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); PCEs overlap with AFS critical watershed	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K9	Upper John Day	Upper John Day River	1707020106	14	High HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); PCEs overlap with AFS critical watershed	High
K9	Upper John Day	Canyon Creek	1707020107	13	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High
K9	Upper John Day	Strawberry Creek	1707020108	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K9	Upper John Day	Beech Creek	1707020109	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); PCEs overlap with AFS critical watershed	High
K9	Upper John Day	Laycock Creek	1707020110	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); PCEs overlap with AFS critical watershed	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K9	Upper John Day	Fields Creek	1707020111	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys and is identified by ODFW as a priority area for this ESU; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); CHART concluded that this HUC5 may have less production potential than others and noted that it is primarily important as a high value migration corridor; PCEs overlap with AFS critical watershed	Medium
K9	Upper John Day	Upper Middle John Day	1707020112	12	Moderate-high HUC5 score; PCEs support three of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); PCEs overlap with AFS critical watershed	High
K9	Upper John Day	Mountain Creek	1707020113	11	Moderate-high HUC5 score; PCEs support three of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K9	Upper John Day	Rock Creek	1707020114	11	Moderate-high HUC5 score; PCEs support three of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); PCEs overlap with AFS critical watershed	High
K9	Upper John Day	John Day River/Johnson Creek	1707020115	11	Moderate-high HUC5 score; PCEs support three of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High
K10	North Fork John Day	Upper North Fork John Day River	1707020201	13	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K10	North Fork John Day	Granite Creek	1707020202	11	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K10	North Fork John Day	North Fork John Day River/Big Creek	1707020203	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; identified by ODFW as a priority area for this ESU; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K10	North Fork John Day	Desolation Creek	1707020204	14	High HUC5 score; PCEs support one of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K10	North Fork John Day	Upper Camas Creek	1707020205	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K10	North Fork John Day	Lower Camas Creek	1707020206	13	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K10	North Fork John Day	North Fork John Day River/Potamus Creek	1707020207	13	Moderate-high HUC5 score; PCEs support two of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K10	North Fork John Day	Wall Creek	1707020208	13	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High
K10	North Fork John Day	Cottonwood Creek	1707020209	11	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High
K10	North Fork John Day	Lower North Fork John Day River	1707020210	12	Moderate-high HUC5 score; PCEs support two of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but that this HUC5 may have less production potential than others; medium rating assigned to tributary PCEs but CHART noted HUC5 is primarily important as a high value migration corridor	Medium

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K11	Middle Fork John Day	Upper Middle Fork John Day River	1707020301	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU	High
K11	Middle Fork John Day	Camp Creek	1707020302	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K11	Middle Fork John Day	Big Creek	1707020303	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K11	Middle Fork John Day	Long Creek	1707020304	12	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence); identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K11	Middle Fork John Day	Lower Middle Fork John Day River	1707020305	8	Moderate HUC5 score; PCEs support one of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but that this HUC5 may have less production potential than others and noted that it is primarily important as a high value migration corridor; identified by ODFW as a priority area for this ESU	Low
K12	Lower John Day	Lower John Day River/Kahler Creek	1707020401	12	Moderate-high HUC5 score; PCEs support all of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K12	Lower John Day	Lower John Day River/Service Creek	1707020402	11	Moderate-high HUC5 score; PCEs support all of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) PCEs overlap with AFS critical watershed	High
K12	Lower John Day	Bridge Creek	1707020403	11	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High
K12	Lower John Day	Lower John Day River/Muddy Creek	1707020404	11	Moderate-high HUC5 score; PCEs support all of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K12	Lower John Day	Lower John Day River/Clarno	1707020405	8	Moderate HUC5 score; PCEs support all of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but that this HUC5 may have less production potential than others; low rating assigned to tributary PCEs but CHART noted that this HUC5 is primarily important as a high value migration corridor	Low
K12	Lower John Day	Butte Creek	1707020406	9	Moderate HUC5 score; PCEs support one of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but that this HUC5 may have less production potential than others	Medium
K12	Lower John Day	Pine Hollow	1707020407	11	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K12	Lower John Day	Thirtymile Creek	1707020408	10	Moderate HUC5 score; PCEs support one of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but that this HUC5 may have less production potential than others	Medium
K12	Lower John Day	Lower John Day River/Ferry Canyon	1707020409	8	Moderate HUC5 score; PCEs support all of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but that this HUC5 may have less production potential than others; low rating assigned to tributary PCEs but CHART noted that this HUC5 is primarily important as a high value migration corridor	Low
K12	Lower John Day	Lower John Day River/Scott Canyon	1707020410	8	Moderate HUC5 score; PCEs support all of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but that this HUC5 may have less production potential than others; low rating assigned to tributary PCEs but CHART noted that this HUC5 is primarily important as a high value migration corridor	Low

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K12	Lower John Day	Upper Rock Creek	1707020411	11	Moderate-high HUC5 score; PCEs support one of five TRT demographically independent populations in this region; HUC5 contains index reaches for spawner surveys; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence)	High
K12	Lower John Day	Lower Rock Creek	1707020412	10	Moderate HUC5 score; PCEs support one of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but that this HUC5 may have less production potential than others; high value rearing/migration corridor for upstream HUC5	Medium
K12	Lower John Day	Grass Valley Canyon	1707020413	9	Moderate HUC5 score; PCEs support one of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but that this HUC5 may have less production potential than others	Medium

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K12	Lower John Day	Lower John Day River/Mcdonald Ferry	1707020414	10	Moderate HUC5 score; PCEs support all of five TRT demographically independent populations in this region; CHART noted that PCEs likely support unique genetic resources (e.g., limited hatchery influence) but no tributary PCEs so CHART concluded that HUC5 is a high value rearing/migration corridor for upstream HUC5s	High
K13	Lower Deschutes	Upper Deschutes River	1707030603	10	Moderate HUC5 score; PCEs support spawning and rearing for two of four TRT demographically independent populations in this region; Deschutes River basin identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K13	Lower Deschutes	Mill Creek	1707030604	9	Moderate HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; Deschutes River basin identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K13	Lower Deschutes	Beaver Creek	1707030605	9	Moderate HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; Deschutes River basin identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K13	Lower Deschutes	Warm Springs River	1707030606	10	Moderate HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; Deschutes River basin identified by ODFW as a priority area for this ESU; PCEs overlap with AFS critical watershed	High
K13	Lower Deschutes	Middle Deschutes River	1707030607	14	High HUC5 score; PCEs support spawning and rearing for two of four TRT demographically independent populations in this region; HUC5 has high value tributary and mainstem habitats; Deschutes River basin identified by ODFW as a priority area for this ESU	High
K13	Lower Deschutes	Bakeoven Creek	1707030608	12	Moderate-high HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; CHART noted that this HUC5 is one of three key eastside tributaries for this population; Deschutes River basin identified by ODFW as a priority area for this ESU	High

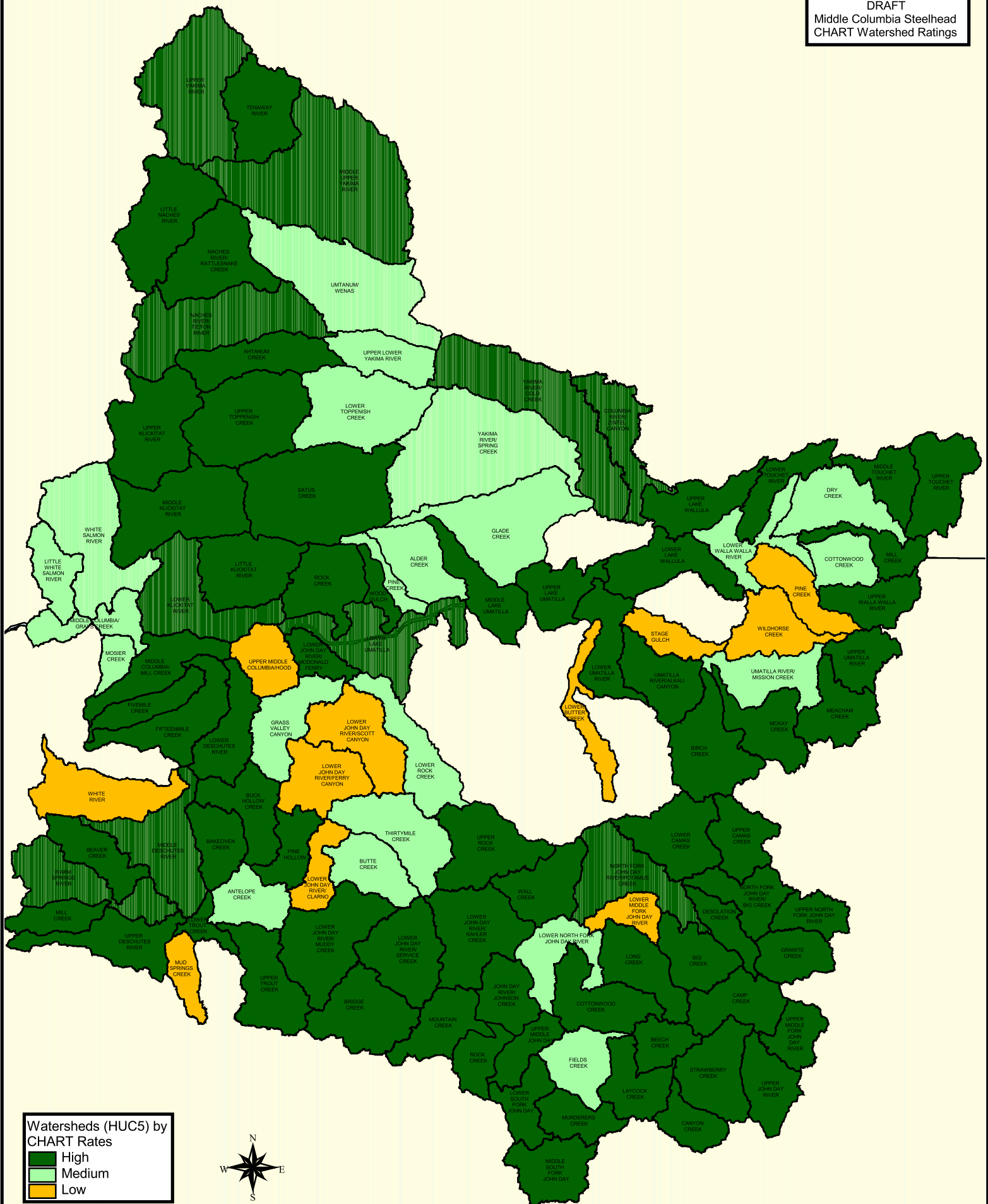
Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K13	Lower Deschutes	White River	1707030610	4	Low-moderate HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; Deschutes River basin identified by ODFW as a priority area for this ESU; CHART noted that PCEs are extremely limited in this HUC5	Low
K13	Lower Deschutes	Buck Hollow Creek	1707030611	12	Moderate-high HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; CHART noted that this HUC5 is one of three key eastside tributaries for this population; Deschutes River basin identified by ODFW as a priority area for this ESU	High
K13	Lower Deschutes	Lower Deschutes River	1707030612	15	Highest HUC5 score in entire ESU; PCEs support spawning and rearing for two of four TRT demographically independent populations in this region; HUC5 has high value tributary and mainstem habitats; Deschutes River basin identified by ODFW as a priority area for this ESU	High

Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K14	Trout	Upper Trout Creek	1707030701	13	Moderate-high HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; CHART noted that this HUC5 is one of three key eastside tributaries for this population; Deschutes River basin identified by ODFW as a priority area for this ESU	High
K14	Trout	Antelope Creek	1707030702	7	Moderate HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; CHART noted that this HUC5 has more limited PCE quantity and quality than other HUC5s in the subbasin; Deschutes River basin identified by ODFW as a priority area for this ESU	Medium
K14	Trout	Mud Springs Creek	1707030704	3	Low HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; CHART noted the extremely limited quantity and quality of PCEs in this HUC5 relative to others in the subbasin; Deschutes River basin identified by ODFW as a priority area for this ESU but PCEs are very limited in this HUC5	Low

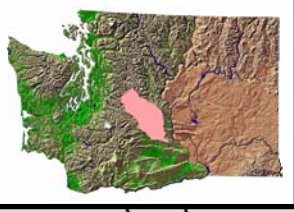
Map Code	Subbasin	Watershed/ Corridor	HUC5 Code	Total HUC5 Score (0-18) ¹²	Comments/Other Considerations	Initial CHART Rating of Conservation Value
K14	Trout	Lower Trout Creek	1707030705	9	Moderate HUC5 score; PCEs support spawning and rearing for one of four TRT demographically independent populations in this region; CHART noted that PCEs are limited here but of high value to support spawning/rearing PCEs for adjacent Upper Trout Creek HUC5; Deschutes River basin identified by ODFW as a priority area for this ESU	High
K15	Upper Columbia/Priest Rapids	Columbia River Zintel Canyon	1702001606	ns	Not scored since HUC5 consists solely of high value rearing/migration PCEs in Columbia River corridor; PCEs support all three TRT demographically independent populations in the Yakima River group	High
	Multiple	Columbia River corridor	NA	ns	Area not scored since CHART concluded that rearing and migration PCEs throughout this corridor are highly essential to ESU conservation	High

* Indicates that HUC5 contains blocked/inaccessible areas that the CHART concluded may be essential for ESU conservation. See Unit Description text for specific areas considered.

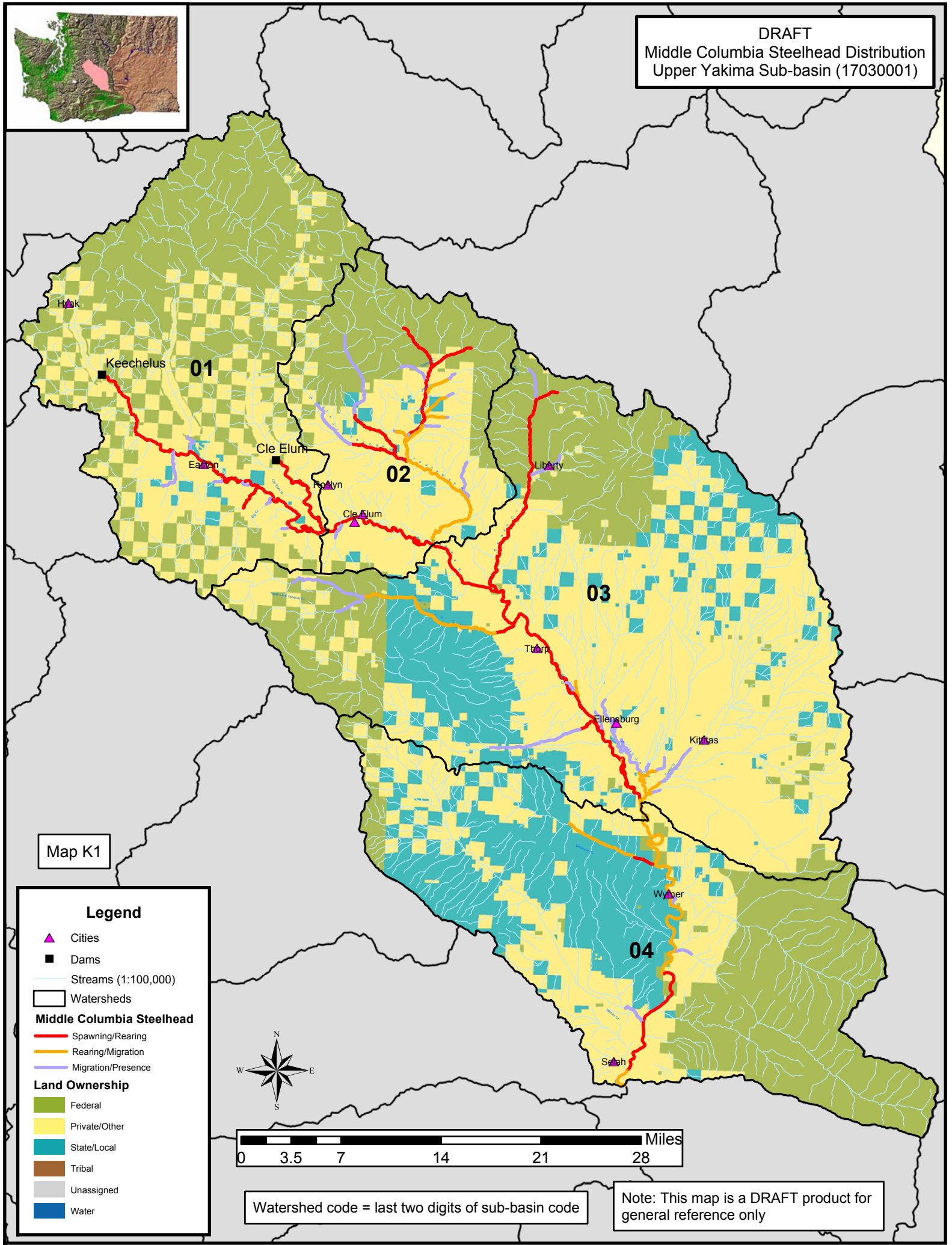
Figure K1. Initial CHART Ratings of Conservation Value for Habitat Areas in HUC5 Watersheds Occupied by the Middle Columbia River Steelhead ESU



Maps K1 through K15. Middle Columbia River Steelhead ESU – Habitat Areas Under Consideration for Critical Habitat Designation (note: the Columbia River corridor is not shown but is under consideration as described in the text)



DRAFT
Middle Columbia Steelhead Distribution
Upper Yakima Sub-basin (17030001)



Map K1

Legend

Cities

Dams

Streams (1:100,000)

Watersheds

Middle Columbia Steelhead

Spawning/Rearing

Rearing/Migration

Migration/Presence

Land Ownership

Federal

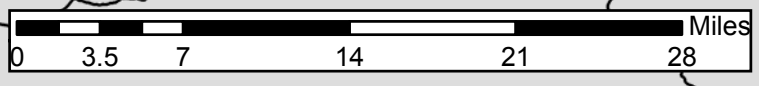
Private/Other

State/Local

Tribal

Unassigned

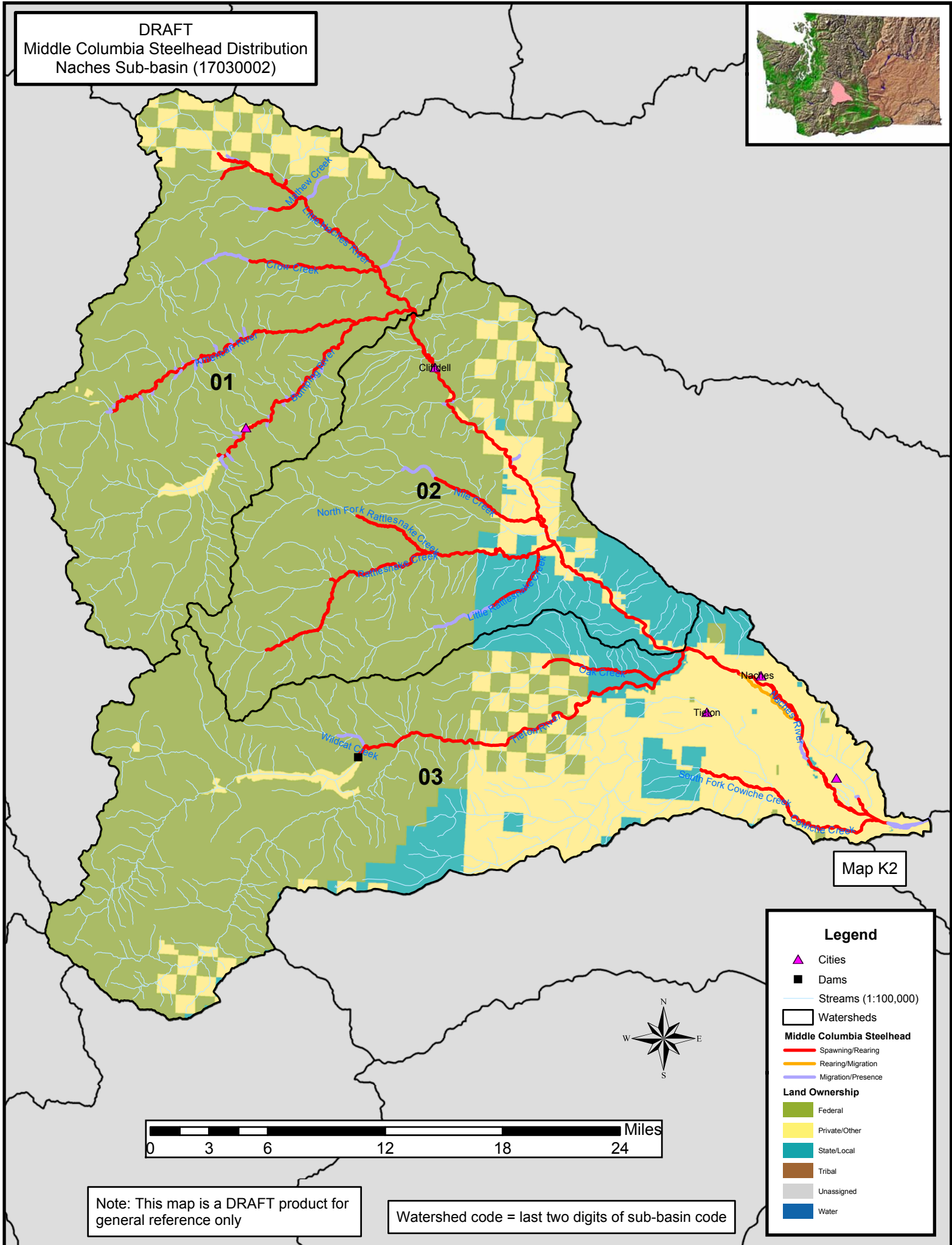
Water



Watershed code = last two digits of sub-basin code

Note: This map is a DRAFT product for general reference only

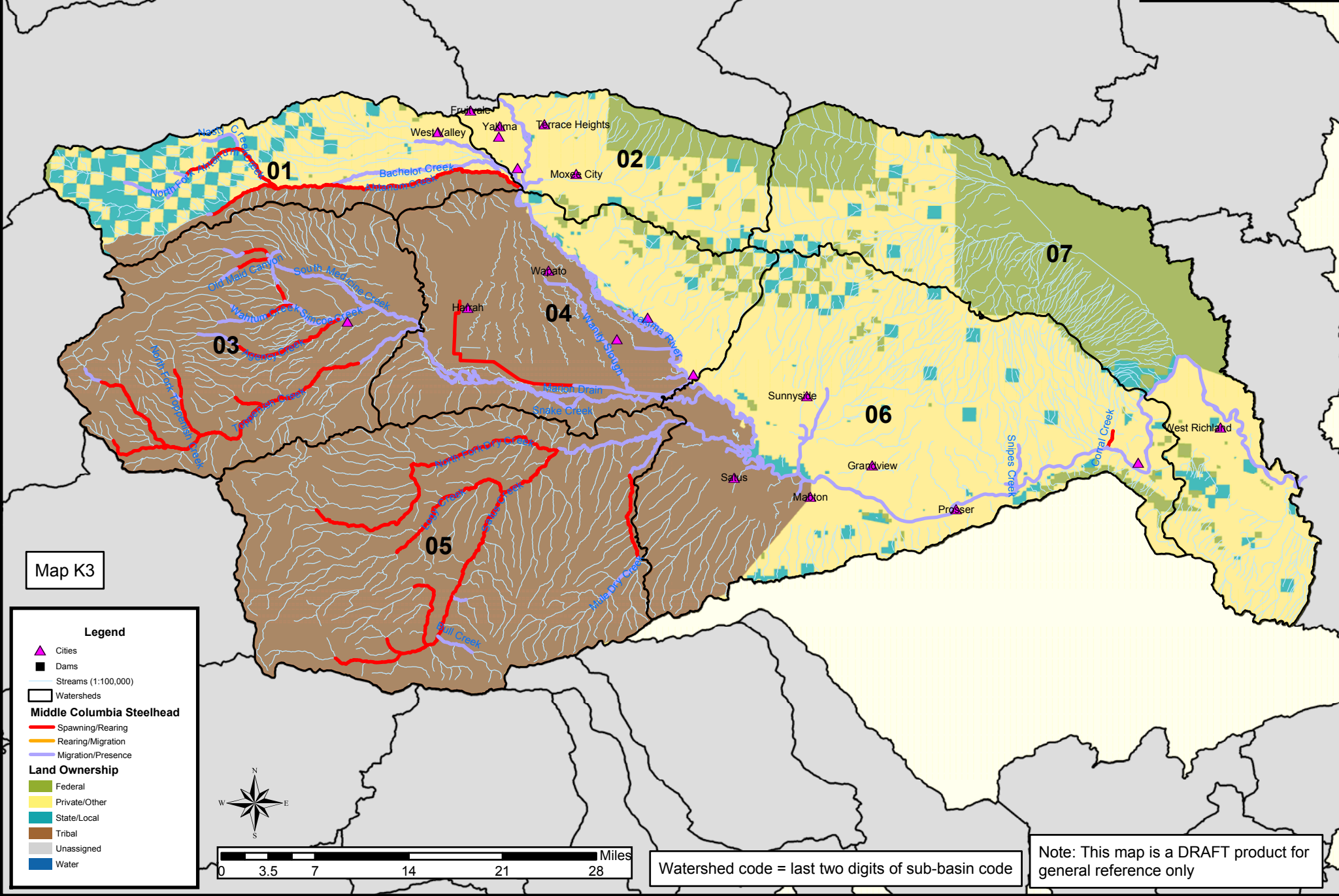
DRAFT
Middle Columbia Steelhead Distribution
Naches Sub-basin (17030002)



Note: This map is a DRAFT product for general reference only

Watershed code = last two digits of sub-basin code

DRAFT
Middle Columbia Steelhead Distribution
Lower Yakima Sub-basin (17030003)



Map K3

Legend

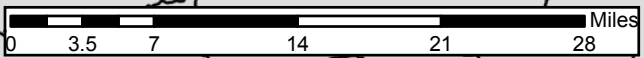
- Cities
- Dams
- Streams (1:100,000)
- Watersheds

Middle Columbia Steelhead

- Spawning/Rearing
- Rearing/Migration
- Migration/Presence

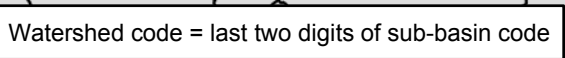
Land Ownership

- Federal
- Private/Other
- State/Local
- Tribal
- Unassigned
- Water



Watershed code = last two digits of sub-basin code

Note: This map is a DRAFT product for general reference only

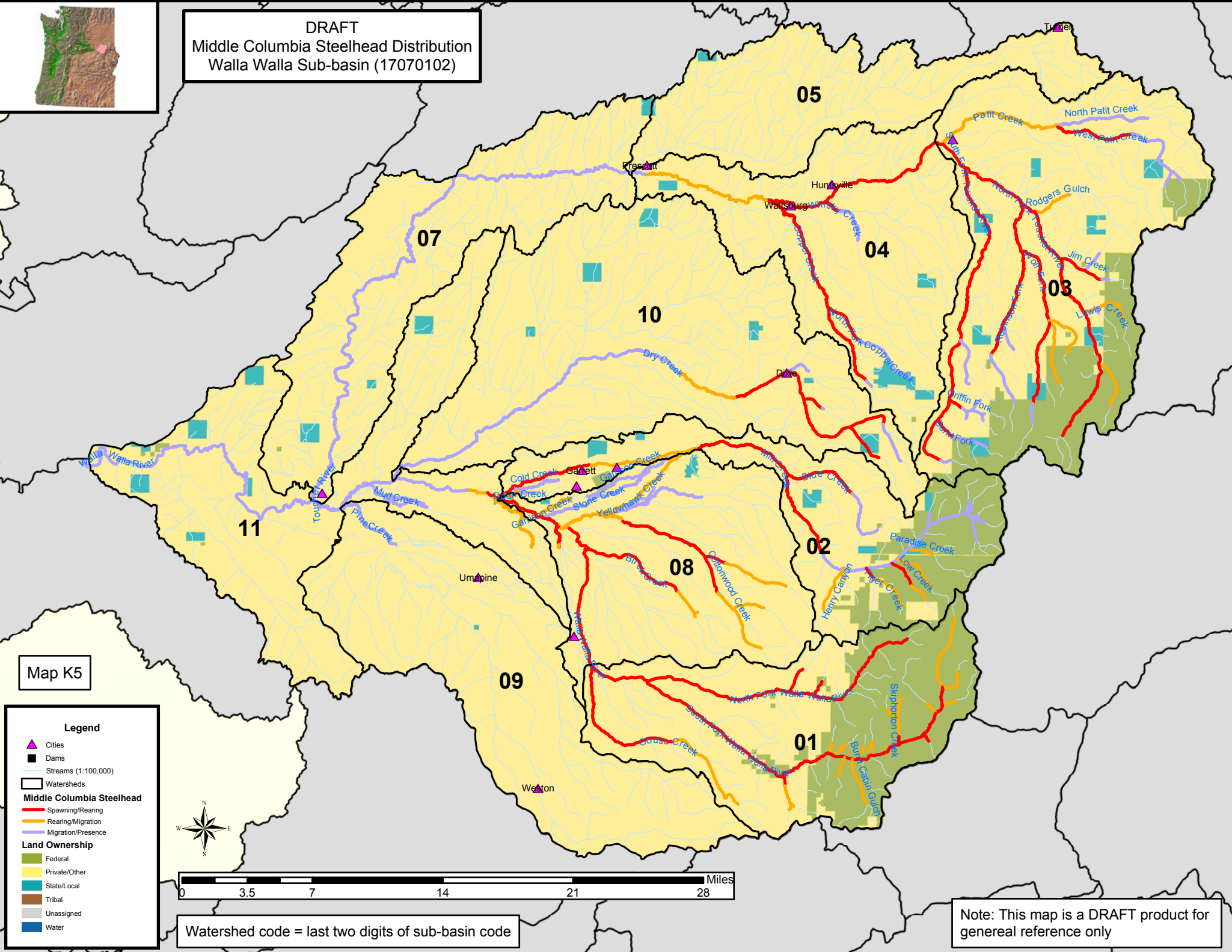


Map K4

-
- Legend**
- Cities
 - Dams
 - Streams (1:100,000)
 - Watersheds
 - Spawning/Rearing
 - Rearing/Migration
 - Migration/Presence
- Land Ownership**
- Federal
 - Private/Other
 - State/Local
 - Tribal
 - Unassigned
 - Water



DRAFT
Middle Columbia Steelhead Distribution
Walla Walla Sub-basin (17070102)

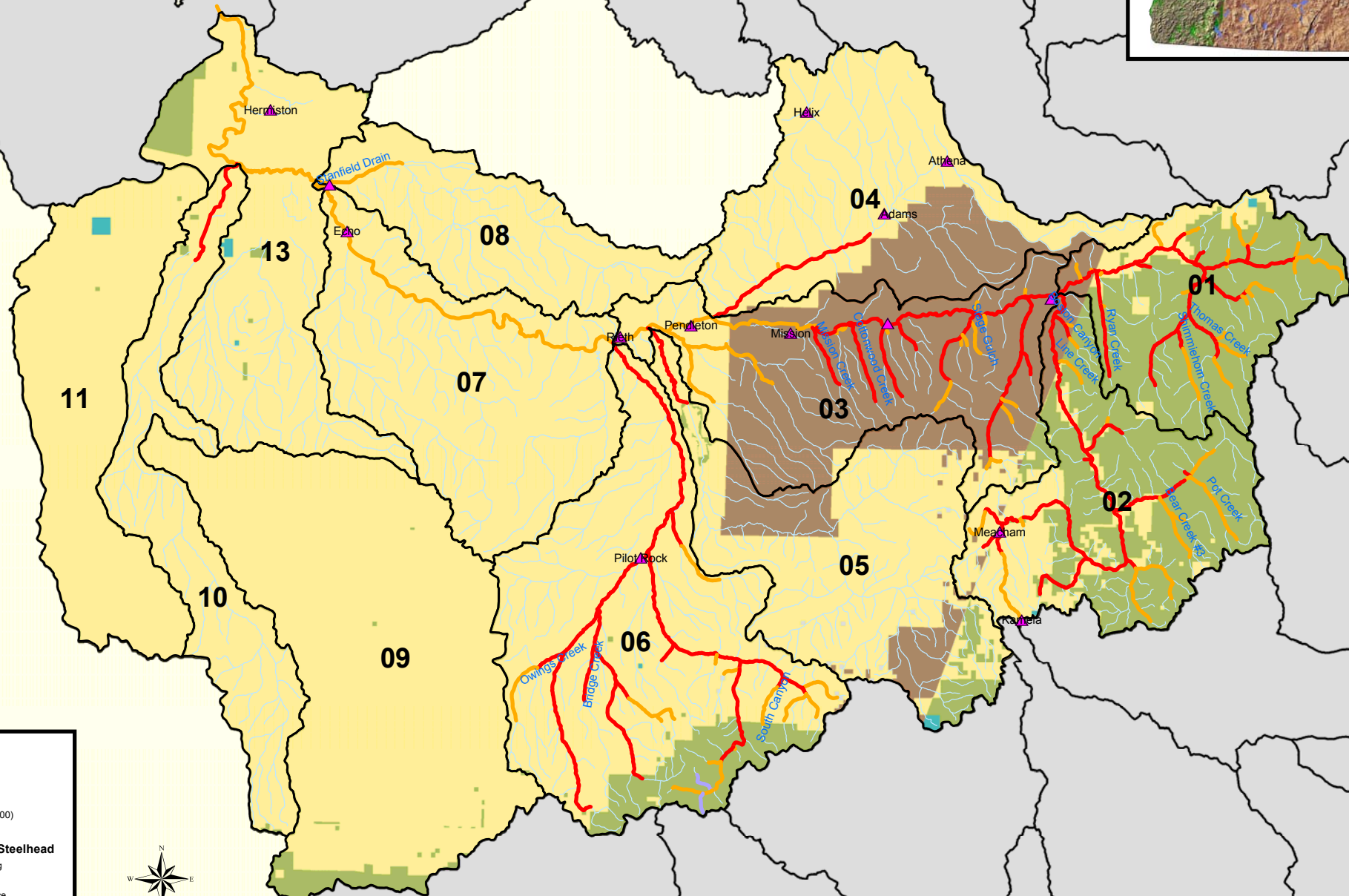
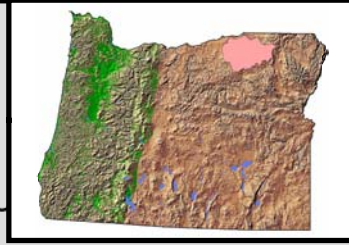


Map K5

Watershed code = last two digits of sub-basin code

Note: This map is a DRAFT product for general reference only

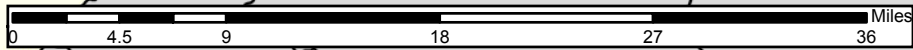
DRAFT
Middle Columbia Steelhead Distribution
Umatilla Sub-basin (17070103)



Map K6

Legend

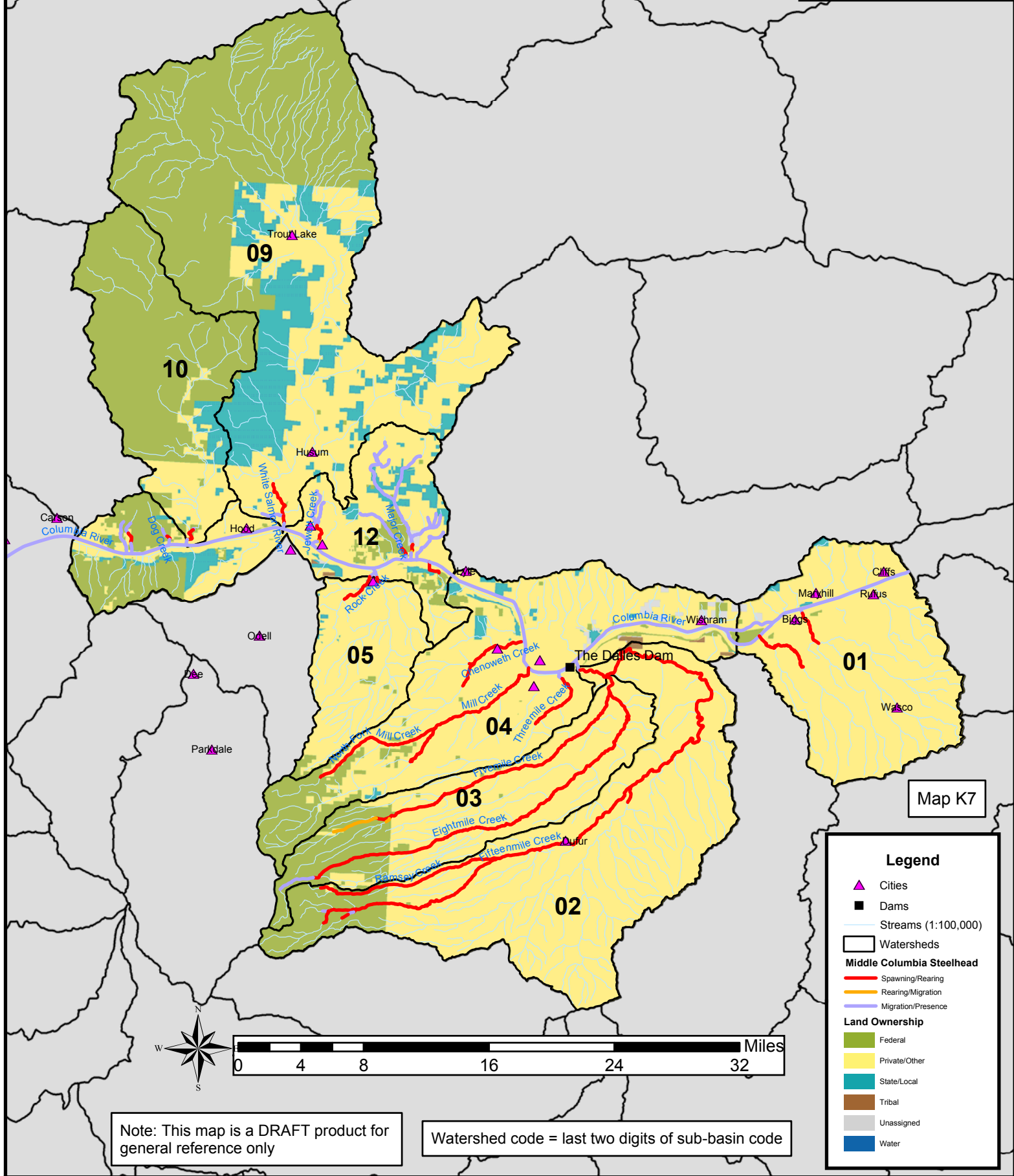
- ▲ Cities
- Dams
- Streams (1:100,000)
- Watersheds
- Middle Columbia Steelhead**
 - Red line: Spawning/Rearing
 - Orange line: Rearing/Migration
 - Blue line: Migration/Presence
- Land Ownership**
 - Green: Federal
 - Yellow: Private/Other
 - Teal: State/Local
 - Brown: Tribal
 - Grey: Unassigned
 - Blue: Water



Watershed code = last two digits of sub-basin code

Note: This map is a DRAFT product for general reference only

DRAFT
Middle Columbia Steelhead Distribution
Middle Columbia/Hood Sub-basin (17070105)



Map K7

Legend

- ▲ Cities
- Dams
- Streams (1:100,000)
- Watersheds

Middle Columbia Steelhead

- Spawning/Rearing
- Rearing/Migration
- Migration/Presence

Land Ownership

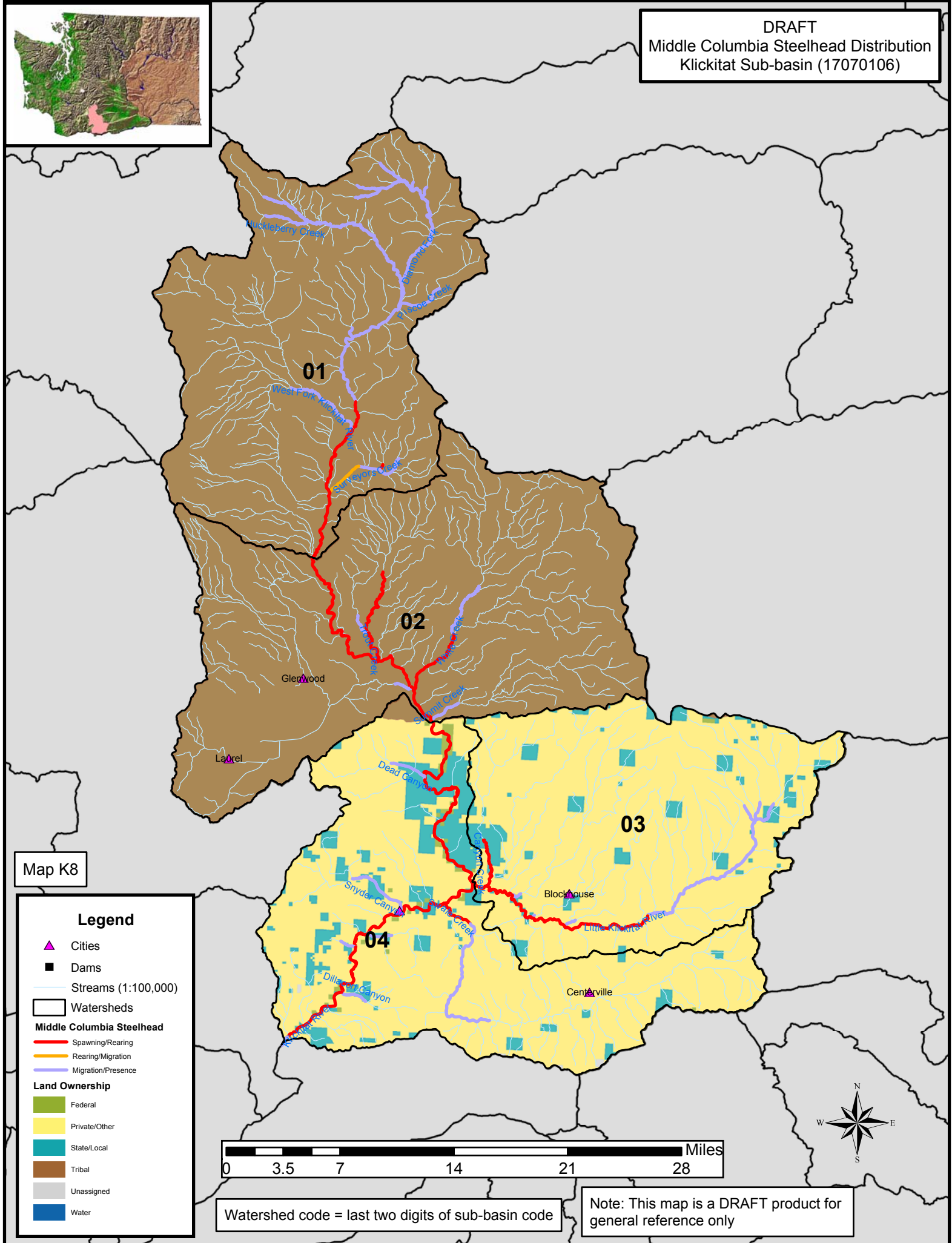
- Green: Federal
- Yellow: Private/Other
- Blue: State/Local
- Brown: Tribal
- Grey: Unassigned
- Dark Blue: Water

Note: This map is a DRAFT product for general reference only

Watershed code = last two digits of sub-basin code



DRAFT
Middle Columbia Steelhead Distribution
Klickitat Sub-basin (17070106)



Map K8

Legend

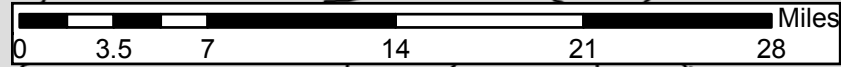
- ▲ Cities
- Dams
- Streams (1:100,000)
- Watersheds

Middle Columbia Steelhead

- Spawning/Rearing
- Rearing/Migration
- Migration/Presence

Land Ownership

- Federal
- Private/Other
- State/Local
- Tribal
- Unassigned
- Water

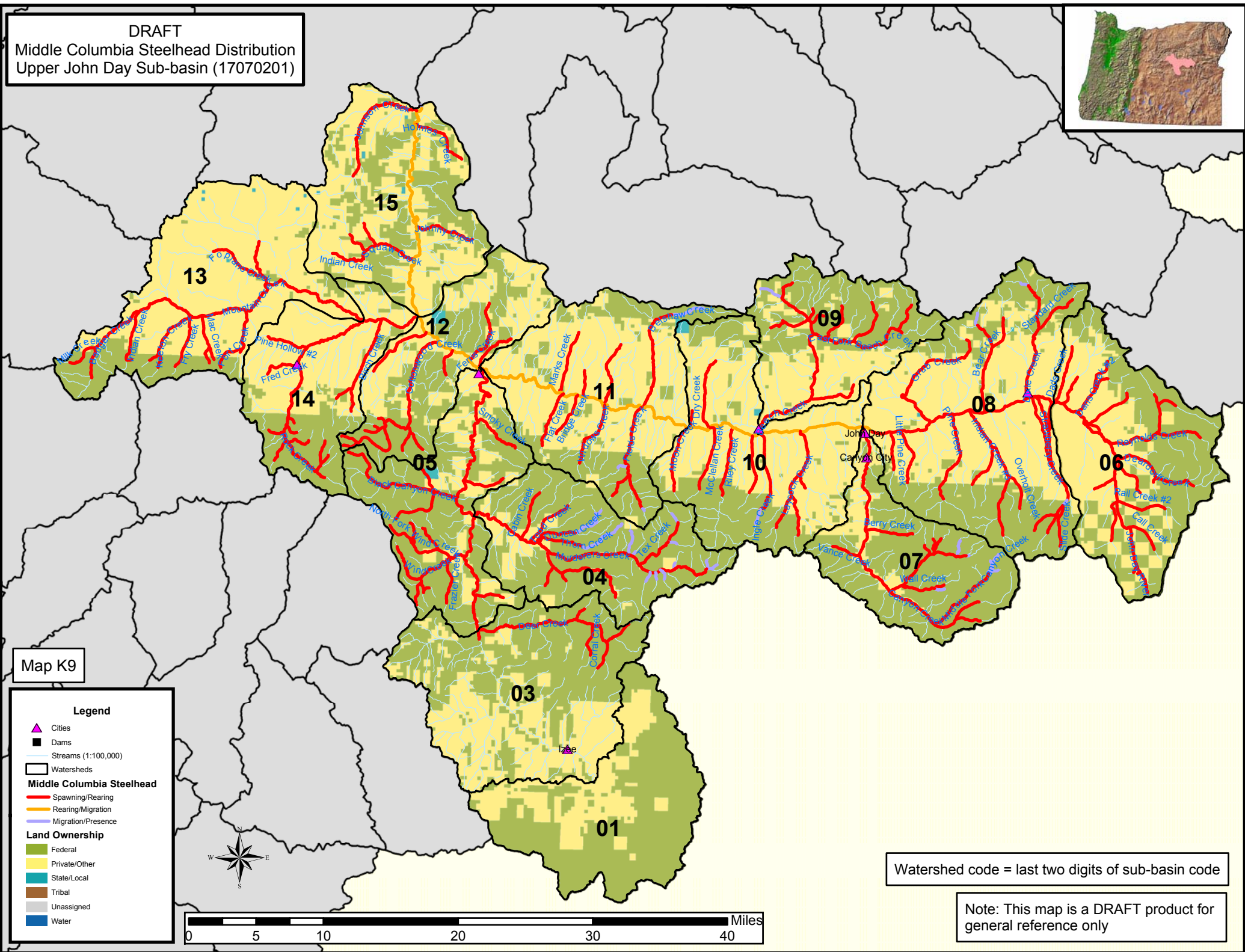


Watershed code = last two digits of sub-basin code

Note: This map is a DRAFT product for general reference only

DRAFT

Middle Columbia Steelhead Distribution
Upper John Day Sub-basin (17070201)



Map K9

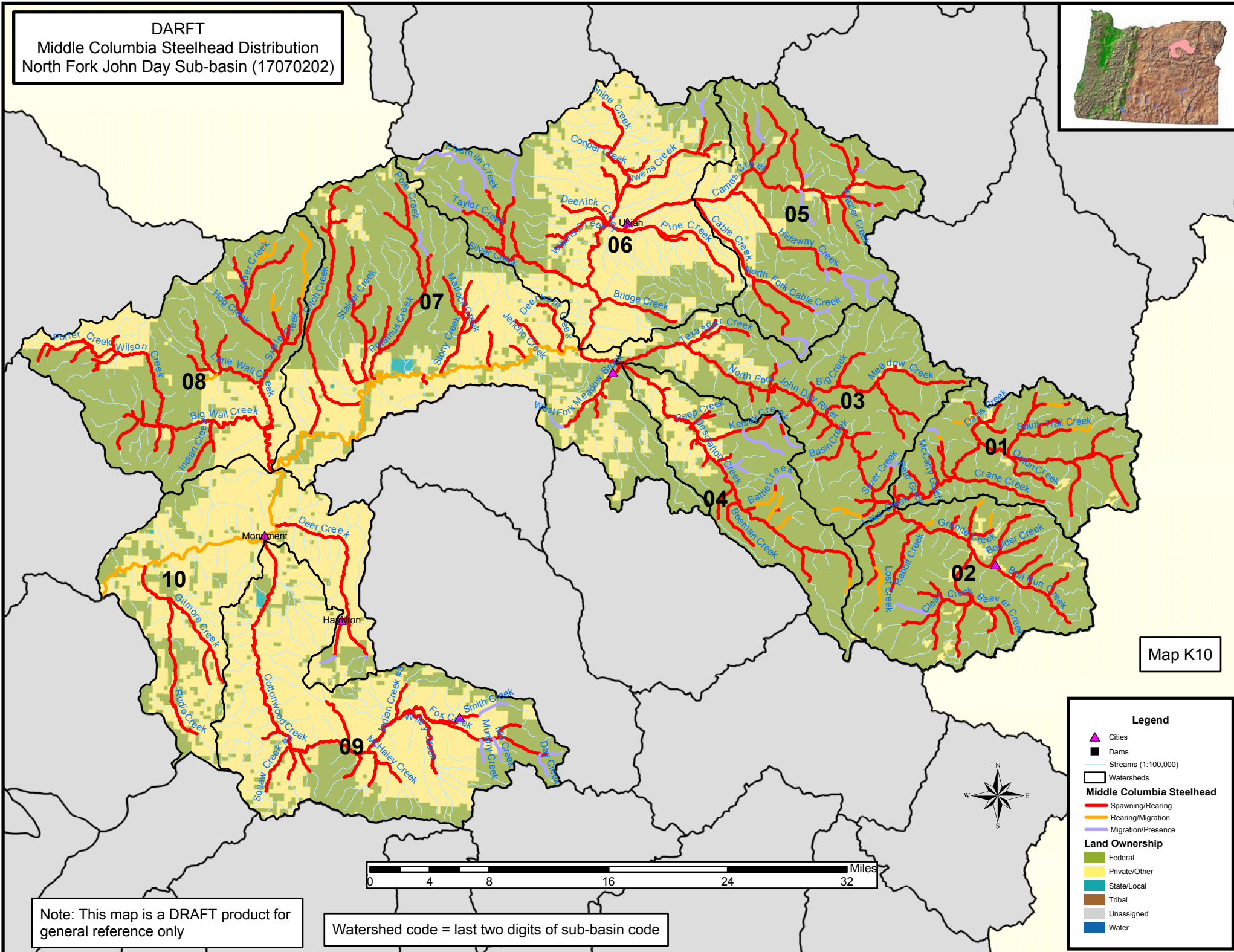
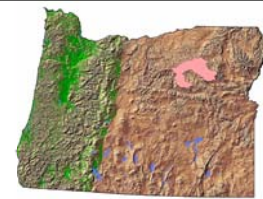
Legend

- ▲ Cities
- Dams
- Streams (1:100,000)
- Watersheds
- Middle Columbia Steelhead**
 - Spawning/Rearing
 - Rearing/Migration
 - Migration/Presence
- Land Ownership**
 - Federal
 - Private/Other
 - State/Local
 - Tribal
 - Unassigned
 - Water

Watershed code = last two digits of sub-basin code

Note: This map is a DRAFT product for
general reference only

DARFT
Middle Columbia Steelhead Distribution
North Fork John Day Sub-basin (17070202)

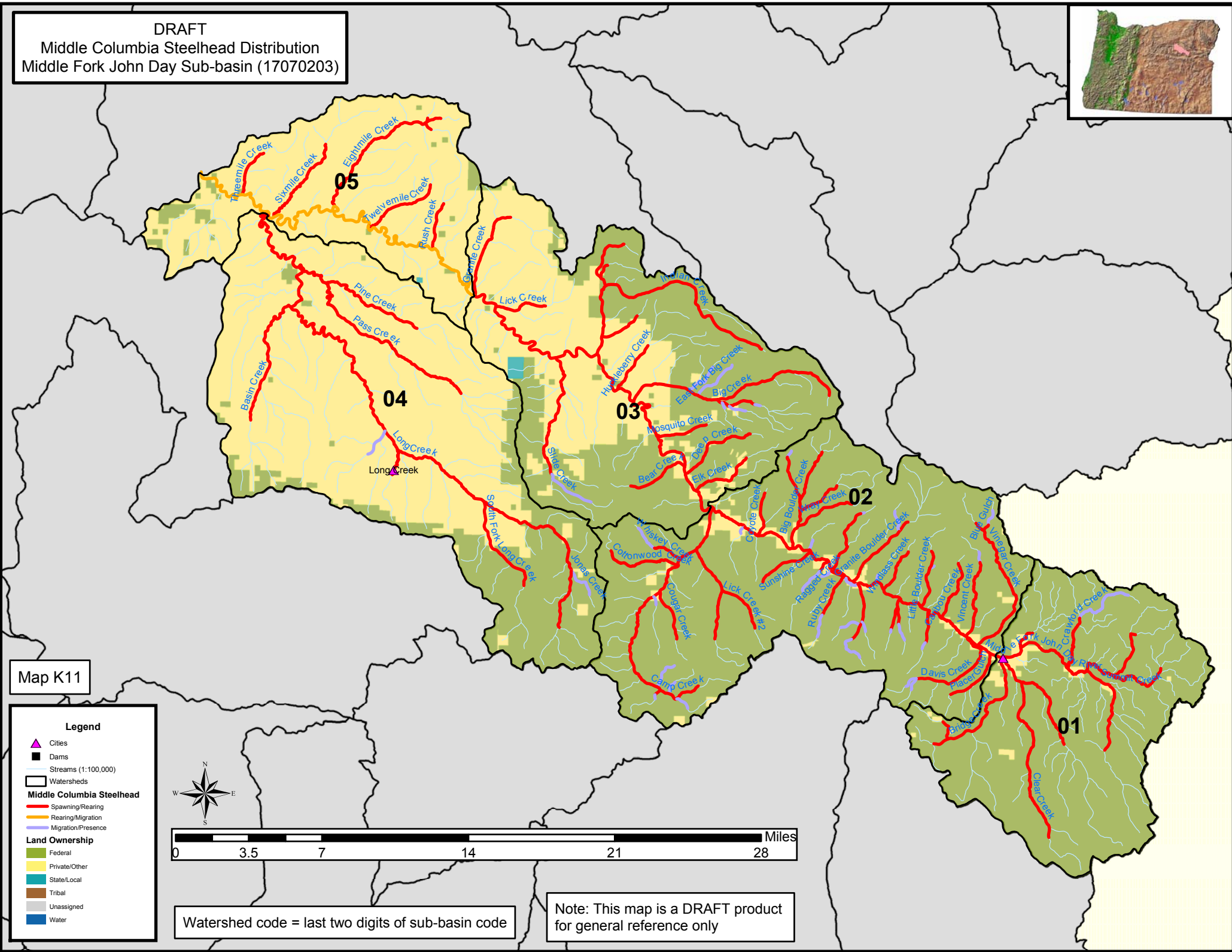
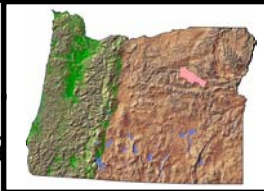


Map K10

Note: This map is a DRAFT product for general reference only








Watershed code = last two digits of sub-basin code






DRAFT
Middle Columbia Steelhead Distribution
Middle Fork John Day Sub-basin (17070203)



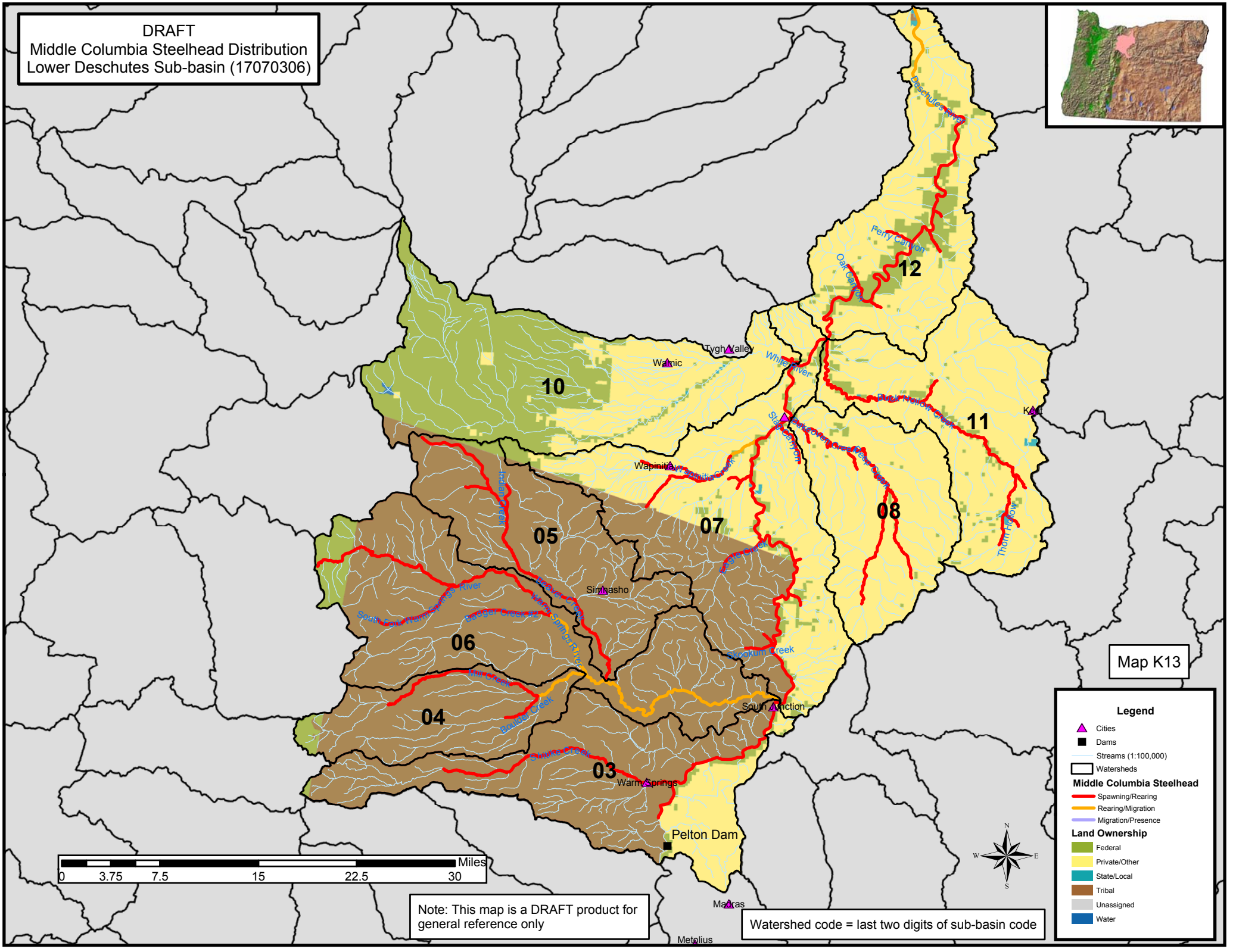
Note: This map is a DRAFT product for general reference only



 Cities
 Dams
 Streams (1:100,000)
 Watersheds
Middle Columbia Steelhead
 Spawning/Rearing
 Rearing/Migration
 Migration/Presence

-  Federal
-  Private/Other
-  State/Local
-  Tribal
-  Unassigned

DRAFT
Middle Columbia Steelhead Distribution
Lower Deschutes Sub-basin (17070306)



Map K13

Legend

- Cities (purple triangle)
- Dams (black square)
- Streams (1:100,000) (blue line)
- Watersheds (black outline)

Middle Columbia Steelhead

- Spawning/Rearing (red line)
- Rearing/Migration (orange line)
- Migration/Presence (blue line)

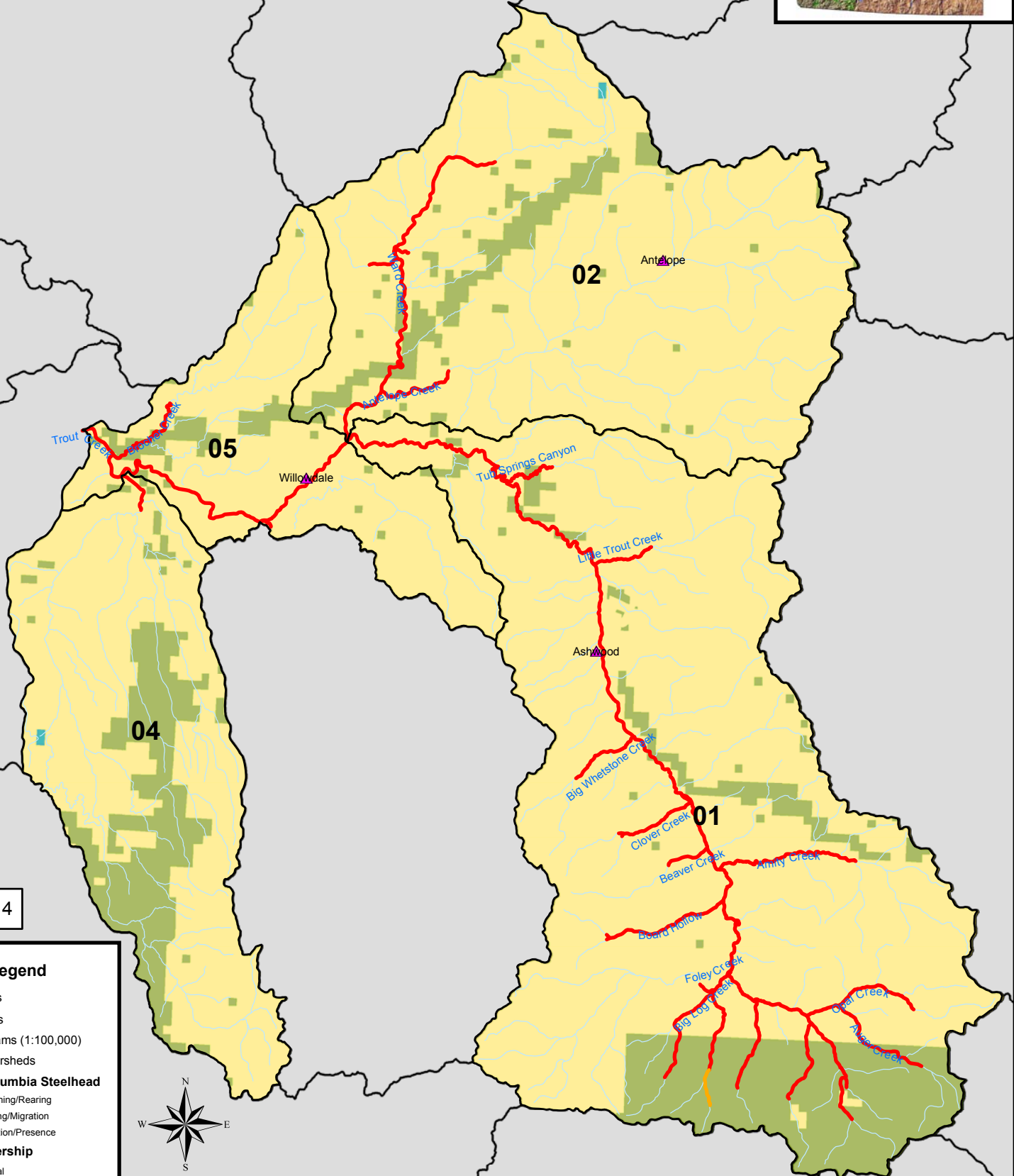
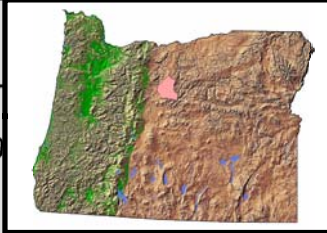
Land Ownership

- Federal (green)
- Private/Other (yellow)
- State/Local (teal)
- Tribal (brown)
- Unassigned (grey)
- Water (dark blue)

Note: This map is a DRAFT product for general reference only

Watershed code = last two digits of sub-basin code

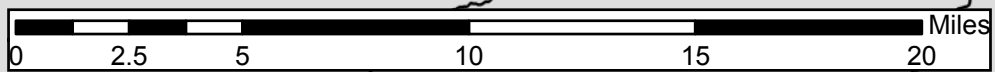
DRAFT
Middle Columbia Steelhead
Trout Sub-basin (17070307)



Map K14

Legend

- ▲ Cities
- Dams
- Streams (1:100,000)
- Watersheds
- Middle Columbia Steelhead**
 - Spawning/Rearing
 - Rearing/Migration
 - Migration/Presence
- Land Ownership**
 - Federal
 - Private/Other
 - State/Local
 - Tribal
 - Unassigned
 - Water



Watershed code = last two digits of sub-basin code

Note: This map is a DRAFT product for general reference only

DRAFT
Middle Columbia Steelhead Distribution
Upper Columbia/Priest Rapids Sub-basin (17020016)



Map K15

Legend

- ▲ Cities
- Dams
- Streams (1:100,000)
- Watersheds
- Middle Columbia Steelhead**
 - Spawning/Rearing
 - Rearing/Migration
 - Migration/Presence
- Land Ownership**
 - Federal
 - Private/Other
 - State/Local
 - Tribal
 - Unassigned
 - Water



Note: This map is a DRAFT product for general reference only

Watershed code = last two digits of sub-basin code

